

# Railway Age

Vol. 64 January 25, 1918 No. 4



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CHICAGO: Transportation Building. CLEVELAND: Citizens Building. WASHINGTON: Home Life Building.

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# EDITORIAL

## Railway Age

The War Savings Stamps have now been on sale for something over two months. The admirable campaign of publicity

### War Savings Stamps

that has been put behind them and the splendid co-operation from agents of all kinds for their sale have spread their use most extensively. However, the stamps and certificates are not yet in as general use as they should be in view of the merits of the plan. Anyone who has studied the method of inducing a man to save money by means of these War Savings Stamps or who has bought some of the stamps himself, has been surprised at the remarkably easy plan they present to save money and to be thrifty. The plan has been advertised so extensively that it is not necessary to repeat its essentials here. But it may be worth while to bear in mind that a mere quarter starts an account, mere quarters carry it on, and compound interest at 4 per cent begins, not at the end of a year, or after a certain interest date, but as soon as \$4.12 worth of War Savings Stamps have been exchanged for a \$5 War Savings Certificate. The readers of this paper no doubt understand the value of these Thrift Stamps, but we wonder if they are doing all that they can to bring their value to the attention of the men under them. Railwaymen have taken it upon themselves to leave no stone unturned to serve their country in this war. This time the opportunity in question relates to Thrift Stamps. Railwaymen can do considerable in encouraging their sale and they will certainly agree that thrift among their own men is very desirable. Railwaymen and employers generally can encourage the sale of Thrift Stamps (1) by buying stamps and certificates themselves, (2) by recommending their sale at railway ticket offices and at the pay car, (3) by recommending their sale and availability at stores, (4) by telling their friends and employees how easy it is to obtain stamps and save money by them, and (5) by backing the organization of War Savings societies among their forces. It should not be hard to encourage a man to be patriotic and save money at 4 per cent compound interest. It is merely a matter of readily available supplies of stamps and publicity to explain the plan and its advantages.

Railway officers are unusually fortunate these days in both their enemies and their friends. W. G. Lee, president of the Brotherhood of Railway Trainmen, announces that railway employees had noticed for months before government control was adopted, that railway officers were permitting unnecessary delays and congestions of traffic. They were doing this to discredit government regulation, he says, and they unintentionally let the situation get beyond their control. W. R. Hearst also has been shadowing the railway officers, and has got something on them. His artistic and veracious newspapers assert that railway officers are "lying down" in order to discredit government control. He advises that the chief malefactors be discharged and that the rest have their "fancy" salaries cut—seemingly forgetting that he once found it profitable to pay one of his editors \$75,000 a year. Lee is one of the four labor brotherhood heads who showed their in-

terest in railway efficiency and the welfare of the United States by calling a strike on all the railways last spring when the country was right on the verge of war with Germany. Later, after we were in the war, his brotherhood actually caused a strike in Chicago in an attempt to tie up the terminals there. Calumny from a man who has shown his interest in railroad efficiency and his patriotism in such ways should be very pleasant. As for Hearst—but why discuss anybody so well-known and perfectly understood by the American people as Hearst? The President of the United States said recently in a message to Congress, referring to the way the railway officers who had general charge of railroad operation before government control was adopted, that they "performed their difficult duties with patriotic zeal and marked ability," and "did, I believe, everything that it was possible for them to do in the circumstances." The Director General of Railroads has not hesitated to rely on railway officers, high and low, for advice and assistance. The public probably will have no great difficulty in deciding whether W. G. Lee and W. R. Hearst, or President Wilson and Secretary McAdoo, are more likely to judge the efficiency and loyalty of railway officers intelligently, disinterestedly and fairly.

Once more the railroads have failed in their efforts to defeat a state two-cent passenger fare law on the ground of dis-

### Illinois Passenger Fare Case

crimination against interstate commerce. They have had little difficulty in showing that the two-cent fares do cause such a discrimination and in the Illinois passenger fare case it was believed that a sufficiently definite issue had been presented to secure a clear-cut decision, which would also have been applicable to other states. The Supreme Court, however, in a decision rendered last week, of which an abstract is published in this issue, holds that the order of the Interstate Commerce Commission on which they had relied is not sufficiently definite in its description of the rates to which it applies to be used to set aside a state law. The commission had held that 2.4 cents a mile was a reasonable rate for passenger service between Illinois and Missouri and Iowa and that the contemporaneous maintenance between points in Illinois of lower rates than the interstate rates constituted an illegal discrimination against the interstate commerce. It even went so far as to issue a supplemental order from which the inference might easily be drawn that its direct purpose was to bring about an advance in the state fares, but the Commission was naturally restricted by the issues presented to it by the complaint and possibly it was excessively cautious in its language. The court repeats the principles laid down in the Shreveport case, that Congress has ample power to prevent railroads from being used in their interstate operations in such a manner as to affect injuriously traffic which is interstate; that Congress, not the state, is entitled to prescribe the dominant rule, and that Congress may provide for the execution of this power through the Interstate Commerce Commission and has done so in the act to regulate commerce. It also repeats its finding that "where the Commission not only finds that a dis-

parity in the two classes of rates is resulting in unjust discrimination against interstate commerce but also determines what are reasonable rates for the interstate traffic and then directs the removal of the discrimination, the carrier not only is entitled to put in force the interstate rates found reasonable but is free to remove the forbidden discrimination by bringing the intrastate rates up to the same level." There is no doubt that the Commission intended that its order should fit the above specifications, but the court says, "while the order shows that it is not intended to require or authorize a readjustment of all the intrastate rates, the description of those to which it applies is left indefinite." It therefore concludes that the uncertainty in the order is such as to render it inoperative and of no effect as to the intrastate rates. A similar case instituted by the express companies to set aside an order of the South Dakota commission came to a similar conclusion. The court's various decisions in cases of this kind leave no room for doubt as to the power of the Interstate Commerce Commission to prevent discriminations resulting from low state rates but "straight is the gate and narrow is the way" of the course to be followed in doing so.

### The Report on Columns

THE FINAL REPORT of the special committee of the American Society of Civil Engineers on steel columns and struts, which was published recently, harks back to the first Quebec bridge failure, because the discussion of the grave disclosures made in the investigation of this disaster culminated in the organization of this body of American bridge engineers.

The committee carried on its work for nearly eight years and, with the aid of the United States Bureau of Standards, conducted a comprehensive series of tests on columns of various sections.

"To report upon the design, ultimate strength and safe working values" were the instructions given the committee and the report covers admirably all phases of its problem except the first, design. The tests disclosed little upon which to base discrimination between the several forms of sections tested. As regards stresses, on the other hand, the results are positive and, might be considered to be, disappointing or even alarming if they had not been anticipated by the progress reports of the committee and the reports of contemporaneous tests carried on under other auspices.

The unwelcome fact is that the ultimate unit strength of a column is materially less than the drop-of-the-beam yield point as determined by the mill specimen tests of the material used. Of even more concern is it that this condition is more pronounced in columns composed of heavy material—such as would be more commonly used in actual construction—than in the light columns of the test. In other words, the ultimate unit strength of the columns composed of thicker material was materially lower, although this fact was not indicated in a comparison of the ultimate strengths and yield points as determined in the mill tests of the material.

The steel used in the tests was of the ordinary structural grade with a specified ultimate tensile strength of 60,000 lb. per sq. in. and a yield point of 38,000 lb. per sq. in. Studies of the ultimate unit strengths of the columns and of their "Useful Limit Points" (a practical elastic limit) disclosed that the former varied from 38,000 lb. per sq. in. to 32,600 lb. and the latter from 35,000 to 19,000 lb. per sq. in., for columns having a ratio of slenderness of 50 to 85. Based upon these facts the committee "regards it as unwise to assume a higher working stress than 12,000 lb. per sq. in. for columns in which the ordinary grade of structural steel is specified and in which the ratio of slenderness is 80 or less.

As this is materially lower than the American Railway Engineering Association column formula,  $16,000 - 70 - r$

with its maximum value of 14,000 lb. per sq. in., the question as to a substitute formula is answered by the committee with the statement that the wide limits covered by the strength values obtained in the tests (28 per cent) precluded the writing of a rational formula at this time.

This wide variation in strength values deserves serious thought, particularly because the workmanship of the test columns and the care with which they were prepared for testing involved much more refinement than is obtained in usual structural steel practice, while the specifications for the material were more rigid than the usual structural specifications in so far as they concerned an effort to secure material of uniform strength. Although definite as to the limitations of column strength, particularly with columns composed of the thicker material, the report is not conclusive as to the cause of the weakness of this thick material and as to the reason why this fault has not been disclosed by the mill tests. More complete information on these vital matters is extremely desirable.

### Make It Solely a War Measure

GOVERNMENT CONTROL of railroad management was adopted as a war measure. If it is to be efficient as a war measure it must be carried out as a war measure.

The sole purpose of war measures should be to win the war as quickly and completely as possible. Many of our people have not awakened to the fact that the United States is engaged in a life-and-death struggle with the greatest military power that ever existed, and that there is a strong chance that the United States may lose. These people persist in thinking a great deal more about the effects war measures will have on our affairs at home than about the effects they will have on the battlefields of Europe. Many of them are constantly engaged in trying to frame and use such measures not mainly to defeat Germany, but mainly to work an economic and social revolution in the United States.

This tendency has been strongly manifested by certain politicians and labor leaders in dealing with the question of railroad control. In the hearings before the Senate committee Senator Cummins has hardly asked anything as to how railroad control may be so shaped as to make it most effective in helping win the war. All his questions about the proposed financial guarantees to the railways have been directed toward whittling the guarantees of the stronger lines down as much as possible. Does he think this would help win the war? If so, he has not said so, nor told why he thinks so. He has asked the director general of railroads to furnish him a list of the salaries paid to most of the higher officers of the railways. He evidently wants to see these salaries reduced. Does he think that wholesale reductions in their salaries would cause railway officers to give more loyal, patriotic and energetic support to the government and thereby contribute toward winning the war?

He might answer that the money saved the public by reducing the guarantees of the companies and the salaries of their officers could be usefully employed elsewhere, and that the companies and their officers should be willing to make the sacrifice. But why not use a little common sense about such matters? Railway owners and officers assume exactly the same attitude toward questions of this kind that other people do. They are perfectly willing to make *their proportionate share* of the sacrifices necessary to winning the war. But if the government, as a pretended war measure, arbitrarily reduces their return from their properties and their



salaries, while not interfering in similar manner with the returns of other classes of business concerns and with the salaries of the officers of other large corporations, railway owners and officers naturally will feel that they have been discriminated against without just cause, or any cause except dirty politics, and they will resent it. Wouldn't any other class of people feel the same way? And if they do feel that way, could the effects upon the efficiency of the railroads be anything but unfavorable?

It is the first duty of every citizen, whatever his position in life, to give unstinted support to the government in this crisis. It is also the first duty of every public man to do everything he can to infuse into all classes of the people a loyal, enthusiastic, fighting spirit. There are many people, high and low, who talk much about the need of willingness to "sacrifice." This war isn't going to be won by sacrifice. No war ever was, none ever will be, however necessary sacrifice may be. It is going to be won, if it is won, by hard, determined, enthusiastic fighting on the battlefield and in every line of industry at home. The fighting spirit needs to be raised to a much higher pitch in all classes of our people than it has been. It needs to be raised and maintained to the very highest pitch among railway officers if the railways are to be operated with the greatest efficiency; and is it not plain that it would be lowered, not raised, by arbitrary action on the part of the government which would be regarded by railway officers as demagogic, discriminatory and unjust?

President Wilson in his railroad control message to Congress said, "Nothing will be altered or disturbed which it is not necessary to disturb." That is the only sound policy to follow in carrying out railroad control as a war measure. Director General of Railroads McAdoo showed in his testimony before the Senate Committee on Interstate Commerce that it is the policy he desires to carry out. We can do all the economic and social revolutionizing necessary after we have won the war. Any man who tries to turn government control into an agency for giving effect to his pet economic or socialistic theories instead of an agency for helping win the war is a better friend of Germany than he is of America.

## The Railway Wage Commission

REGARDLESS of their opinions as to the advisability, necessity or probable success of the plan of government control under which the railroads are now being operated, all railway officers who have had to deal with the wage question, and that includes most of them, have occasion to feel greatly relieved that it has been taken out of their hands, for the time being at least. Moreover, they now have reason to believe that before it is ever restored to them to deal with, an important step will have been taken toward simplifying it for them in the future.

One of Mr. McAdoo's first acts as Director General of Railroads was to appoint a railway wage commission which is charged with the duty of investigating and assembling for his decision the facts bearing on the entire question of railway wages, their relation to wages in other industries and to the cost of living and the relation between the wages of various classes of railway labor.

Thus has been accomplished at one step what the railroads have long advocated, that wages should be determined by the same authority that fixes the rates out of which they must be paid. The railroads have heretofore urged that wage questions be referred to the Interstate Commerce Commission, because the commission has heretofore been the most potent rate-regulating body. Now, while it retains its jurisdiction in ordinary rate matters, the authority of the Director General is paramount and if he advances wages to a point which

requires an advance in rates he can regulate one side of the equation as easily as he can the other. This is an important advantage which the railroads did not have.

The new wage commission can, therefore, report its recommendations without consideration for anything but the facts as it finds them. Its personnel is such as to warrant the belief that its sole purpose will be to give justice to all concerned but it is also singularly free from most of the conditions that have hampered an adequate settlement of wage problems heretofore. It is understood that the brotherhoods of train service employees are to receive first consideration, as usual; but this time it is merely because they were the first to present their demands. The government now has no more reason to be awed by them than by the other employees, whereas the railroad managers have had. The brotherhoods are organized and the majority of railway employees are not; but even if political considerations are to count for anything the unorganized employees have more votes. In theory at least, the brotherhoods still have the power to call a strike. It is unthinkable that they should be allowed to do so, but at any rate the other employees are now on more even terms with them because if they are not sufficiently under the discipline of a union to be able to strike successfully under present conditions, they at least can quit if they are not satisfied and easily find other jobs, which many of them are proving every day.

The railroads, although they may have preferred to increase the wages of many of their lesser paid men, have been unable to do so to the extent which would have been desirable and which has now become almost a necessity, because the strongly organized employees have always got to the trough first and there were limits to the ability of the railroads to pay. In consequence the disparity between the wages of the organized and the less strongly organized or unorganized employees has steadily widened while the railroads were practically powerless to remedy the situation.

It has often been glibly asserted that the American people were willing to pay whatever rates were necessary to enable the railroads to pay fair wages. Perhaps this is true; but while the American railroads have paid the highest wages of any railway system in the world, the fact remains that the American people have not thus far paid rates that would warrant the wages that those who receive the wages consider fair, nor have the railroads ever had any assurance that if they raised the wages they would be allowed sufficient rates. On the other hand, they have frequently had the contrary experience of increasing wages only to be denied corresponding increases in rates on the ground that their earnings would probably increase enough in the next few months to make higher rates unnecessary.

Certainly Mr. McAdoo and his wage commission have no lack of power to deal adequately and fairly with the entire wage situation. If they have not unlimited funds at their disposal they certainly have command of all the money that the American people as a whole can afford to pay for railroad wages. If the wages are placed too high the shippers who pay for most of them in the first place will naturally complain; but they cannot fairly object to any reasonable element in the necessary cost of transportation and the only difficulty lies in the complicated problem of ascertaining the facts and stating them in such a way that they will be convincing.

The wage commission is faced with a delicate problem of adjustment, as between the claims of the wage earners on the one hand and the rate-payers on the other, and as between the various classes of employees. It will also have to consider the relation between railway wages and wages in other kinds of employment. The usual selfishness of human nature will naturally be found on all sides. However, it will not be confronted with the practical obstacles that have heretofore prevented an ideal solution of the problem, and it

ought to be able to reach a solution of the intricate problem before it which will commend itself to all concerned. It has neither the prejudices of the employer nor those of the employee. It ought to be just as much concerned with the interests of the rate-paying public as with those of the wage earning public, and with the condition of one class of railway employees as with that of another.

If it finds that railway wages ought to be so increased that the present rates will not produce sufficient revenue to pay them and the other necessary expenses of transportation, then the rates ought to be increased also. Otherwise the wages will not be paid by those who use the railroads in proportion to their use but by the entire public in the form of taxation, and the railways will be left in an impossible condition after the government guarantee has expired.

### "Lest We Forget."

ALMOST EXACTLY twelve years ago one of the wisest and farthest-seeing Americans that ever lived made a prediction. The prophet was James J. Hill. The prophecy was that continuance of the policy of railroad regulation then being adopted by the state and national governments would bring national disaster.

The policy was continued. The prophecy has been fulfilled. The disaster has come. It has come in the midst of the nation's participation in the greatest of all wars. The government last week ordered the industries of the busiest and most populous part of the United States shut down for five days. It has made each Monday in the same territory an enforced holiday for ten weeks.

Those responsible for the order say it was necessary because the railways could not haul all the coal that the mines could produce and other industries could consume—that this was the only way to relieve the transportation congestion and increase the movement of fuel.

This is but a partial explanation. Last summer the government created a fuel administration and put at its head a college professor, who knows little about fuel and less about administration. The great need of the country as regards fuel was a vast increase in production. No possible amount of conservation would make the supply sufficient. To get the needed increase of production the prompt adoption of large constructive measures was essential. Prices must be so fixed as to encourage the operation of mines which, under ordinary conditions, would be unprofitable. Production must be raised and kept to the very maximum possible during the summer and fall months when transportation conditions were favorable. It was desirable to divide the country into zones as was long ago done in England, so that coal would be consumed near where it was produced, and cross-hauling and waste of transportation be eliminated.

The large constructive measures needed were not adopted. Instead of co-operating with the railways as was necessary, the fuel administration spent its energies in "passing the buck" to them. With a fuel administration which knew anything about the fuel business there would have been a larger amount of coal produced and transported.

The rest of the explanation of the existing situation is that James J. Hill's prediction has been fulfilled. For twelve years the state and national governments have followed a policy of regulation intended to compel unrestricted competition between railroads and to reduce their net return to the lowest basis which the courts would not hold confiscatory. In consequence, while the productive capacity of our industries has been rapidly increasing, the expansion of the facilities of our railways has been rapidly decreasing. The final outcome was clear to every intelligent and sane railroad man or business man. It was as certain that under this policy

the railways in time would become unable to handle all the country's commerce as that the law of gravitation would continue to operate or the sun to rise in the morning and set in the evening. The fulfillment of Mr. Hill's prophecy has been precipitated by the war, but it was bound to come whenever from any cause there came a great increase of industrial activity.

Who have been chiefly responsible for the policy of regulation, which led to such results? Those responsible are Senator La Follette, Senator Cummins and other politicians of the radical class, who have succeeded in getting the states and the nation to adopt and persist in a punitive, repressive policy in dealing with the railways regardless of its effects on the railways, and on commerce and industry.

When the present transportation condition has been predicted, La Follette, Cummins and others of their class have replied that the railways were over-capitalized, and were earning too much, and that predictions of disaster were mere "calamity-howling." And what do they say now, when these predictions are being fulfilled? They say that the railways have "broken down"; blame the managers for the "break-down," and talk about government ownership as the remedy! The government under a new system of war control, and with the patriotic support of railway officers, is trying to retrieve the mistakes of the past; and certain of the radicals in and out of Congress are trying to reduce the compensation the administration proposes to pay the railways, to slash railway officers' salaries and to otherwise emasculate the administration's plan in ways that would undermine its effectiveness as a war measure.

The country is at the parting of the ways in respect to its railroad policy. It must choose whether it will follow in future those responsible for the policy which has paralyzed transportation and industry and who are now advocating government ownership, or those who have opposed the past policy of regulation, who have foreseen and predicted its results and tried to get it reformed and who are now opposing government ownership because they believe it would make conditions still worse, if possible.

Which class of leaders will the public follow in future? The answer to this question may exert as much influence on the economic and political future of the United States as the outcome of the great war.

### New Books

*Proceedings of the International Railway Fuel Association.* 416 pages, illustrated, 6 in. by 9 in. Published by the association, J. G. Crawford, secretary, 702 East Fifty-first street, Chicago, Ill. Price, leather bound, \$1.50, paper bound, \$1.00.

This is the official proceedings of the ninth annual convention, of the Railway Fuel Association which was held in Chicago, May 14 to 17, 1917. It contains papers with complete discussions on the following subjects: Powdered Coal; Storage Coal; Locomotive Feedwater Heating; Front Ends, Grates and Ash Pans; Car Shortage and Coal Shortage; Conservation Appeal; Council of National Defense; Fuel Economy in Relation to Reducing the Cost of Kindling Fires in Locomotives; Fuel for Small Furnaces; Graphical Daily Records of Performances of Enginemen and Locomotives; Soot, Tests of Six Grades of Coal from a Franklin County (Illinois) Mine; and Theory, Practice and Results of Fuel Economy. Of particular interest are the papers and discussion on locomotive feedwater heating and the tests made by the University of Illinois for the association, on Illinois coal. This book is a material addition to the information put forth by this progressive association, and contains suggestions which will to a very large extent assist in the conservation of fuel on railways.



# The New Pennsylvania Entrance Into Indianapolis

A 41-Mile Line Between Ben Davis and Frankfort  
Gives a Line to Chicago Over Its Own Rails

AT A COST OF MORE THAN \$4,500,000 or over \$100,000 per mile, the Pennsylvania Lines are now completing a new railroad in Indiana which will give the system a complete line between Indianapolis and Chicago. The new line is being built by a separate corporation, the Indianapolis & Frankfort Railroad, and is 41 miles in length. It extends north from a connection with the St. Louis division at Ben Davis, Ind., about six miles west of Indianapolis, to Frankfort on the Michigan division. These divisions are both parts of the St. Louis system of the Pennsylvania Lines which, until recently, was the Vandalia Railroad, and which is now a part of the new consolidated company, the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad. The new line is being built under the direct jurisdiction of officers of the St. Louis system. At Lebanon, 27 miles north of Ben Davis, this line crosses the Central Indiana, which is controlled jointly by the Pennsylvania and the Big Four.

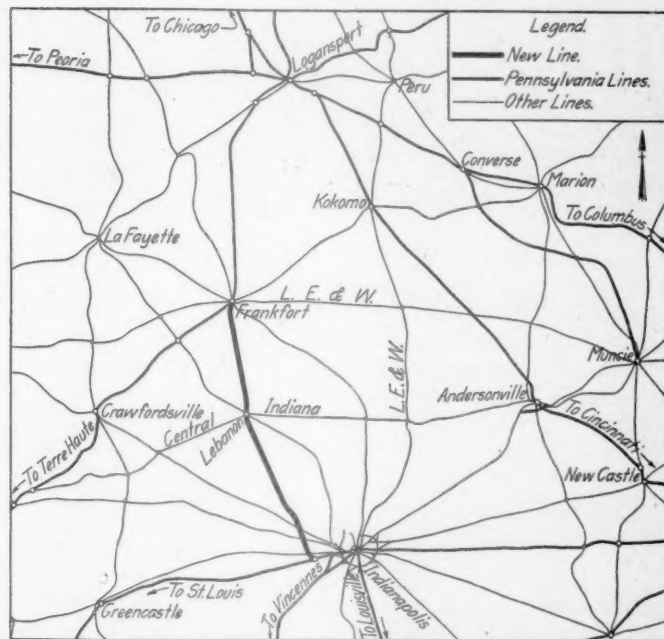
On the completion of this road the traffic of the Panhandle between Chicago and Indianapolis and the south, which is now handled over the Logansport and Richmond divisions, from Chicago, through Logansport to Kokomo, Ind., and then over the Lake Erie & Western to Indianapolis, will be diverted to the new route at Logansport, and will go over the Michigan division to Frankfort, and then over the new line to Ben Davis and Indianapolis. While no distance is saved by the new route for passenger traffic, it will be about six miles shorter for most freight movements. The grades are much lower and the traffic facilities will be much improved.

Under the present arrangements the east and west traffic of the Pennsylvania lines through Indianapolis is handled over the Indianapolis and St. Louis divisions. Divisions from Vincennes and Louisville also enter the city from the south and the freight is handled between the different lines by means of the belt line of the Indianapolis Union Railway. These divisions furnish the facilities for the east, west and south traffic. The existing Pennsylvania lines leading to the territory north of Indianapolis intersect the east and west lines at Terre Haute, 72 miles west of the city, and at Richmond, 68 miles east, meeting at Logansport.

The Pennsylvania has seven lines radiating from Logansport. The traffic originating at Indianapolis and on the divisions to the south, a large amount of which is coal from the southern Indiana fields on the Vincennes division, des-

and by the relocation of certain parts of the line to avoid slow speed movements through towns or by the construction of a new line. The latter plan was adopted, as analyses of the situation showed that, with the traffic then being handled by the Pennsylvania, the advantages gained justified the investment necessary for its construction.

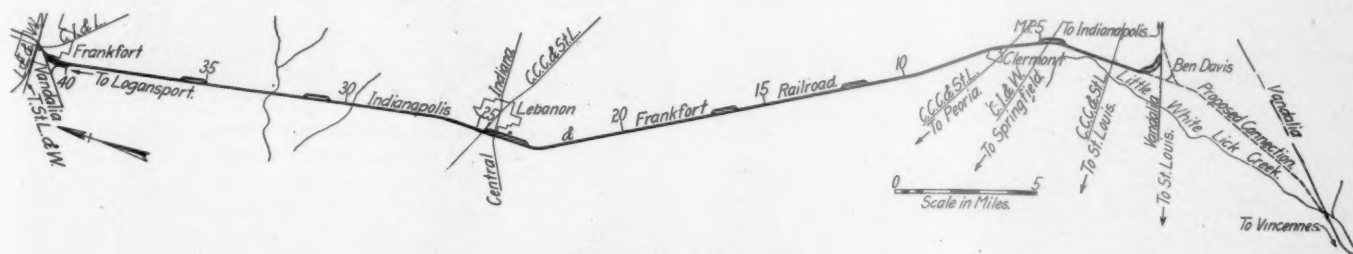
In deciding on a new line opportunity was also taken to improve operating conditions at Indianapolis. The use of the Lake Erie & Western tracks north from Indianapolis



Relation of the New Line to Other Pennsylvania Lines

required the turning of all passenger trains on a wye at that point. The old arrangement also made it necessary for all of the coal trains to use the tracks of the Indianapolis Belt for about 11 miles and the congestion on this line led to excessive delays. Both of these conditions will be eliminated on the new line.

Surveys for the new line were first made in 1911. The maximum grades of the new line were established at 0.3 per cent northbound and 0.5 per cent southbound as compared



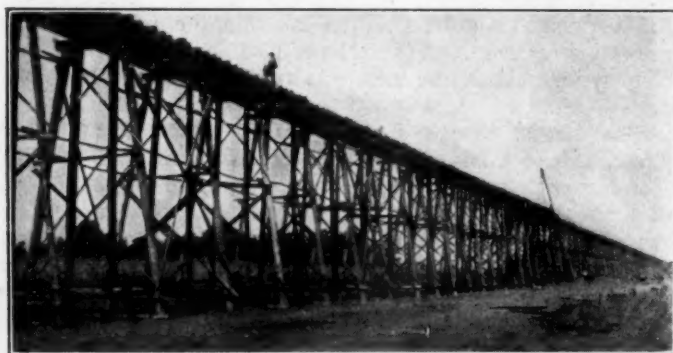
Map of the New Line

igned to points in the "gas belt" and in northern Indiana and to Chicago is handled north out of Indianapolis over the line of the Lake Erie & Western for a distance of 55 miles under a trackage agreement. This arrangement is unsatisfactory in several ways. Relief could be had either by increasing the facilities of the Lake Erie & Western, by the reduction of grades and the construction of second track

with 1 per cent grades in both directions on the old route. There are few curves on the new line and the sharpest are 1 deg. except for one curve at the Ben Davis connection. While for the present only a single track will be built, right-of-way has been provided and the masonry has been built for a double track line.

The new line is also a part of the proposed future im-

provements including a connecting line from Ben Davis to Mooresville on the Vincennes line. By means of this proposed connection the traffic from the Vincennes division for points north of Indianapolis will be diverted from the present route through the city to this new connection, saving about 11 miles in distance and to an extent relieving the yards at Indianapolis and the St. Louis and Vincennes divisions near Indianapolis, where both divisions have ruling grades against the coal movement. The construction of the Indianapolis to Frankfort line provides a 0.3 per cent grade from the St. Louis division connection to Chicago, and a



A Standard Construction Trestle

0.3 per cent line can be had from the coal fields and from Louisville without prohibitive cost.

#### Grade Crossings Eliminated on New Line

As mentioned previously, the new line is 41 miles in length. Sufficient property was acquired for a double track line, the right-of-way being 100 ft. wide for the entire distance and wider where necessary. The country traversed is mainly flat and for much of the distance the tracks are carried on embankments, making frequent borrow pits necessary.

Passing tracks 4,500 ft. long are provided at intervals of about six miles. These sidings are so located that controlling grades are not encountered in leaving. The grades are separated at all highway crossings on these sidings.

The width of roadway at sub-grade is 24 ft. for single track and all slopes are  $1\frac{1}{2}$  to 1. The tracks will be laid with gravel ballast, 85-lb. rail and untreated oak ties. Cast iron pipe is used for small drains up to 48 in. in diameter and reinforced concrete culverts for the larger openings, farm crossings and cattle passes.

There will be no crossings at grade with steam or electric railways, the new line in all cases being carried overhead. Twenty-four highways are carried under the track through subways and two cross overhead. These 26 crossings include most of the main roads so that the highways that cross the line at grade are generally unimportant. Where possible, at points where the line crosses highways near their intersection, marginal roads parallel to the right-of-way enable two crossings to be consolidated into one or allow part of the traffic to avoid crossing entirely.

Lebanon is the only town of any importance reached by the new railroad. Here the line passes through the outskirts of the city and is elevated, all streets being carried under the tracks through subways. A modern station will be provided at the street level and passengers will reach the platform at the track level by subways and stairs. An electric elevator will also be provided for handling milk and baggage. At the track level the layout will be built for double track. The passenger platform will be located between tracks and will extend across two streets and an electric line. The platforms over the bridges have already been built as a part of the bridges.

Property has been acquired near the business center of the city as a site for a local freight house and team tracks. This property will be reached over the Central Indiana tracks and the interchange track between the two railroads. Interchange tracks will be provided here.

In order to lessen the grading on the new line at the crossing over the Cincinnati, Indianapolis & Western it was necessary to depress the main track and a passing siding on that line. The maximum depression was about 6 ft. which necessitated a cut with a total length of 4,000 ft. The lowering of these tracks was done by the Indianapolis & Frankfort contractors.

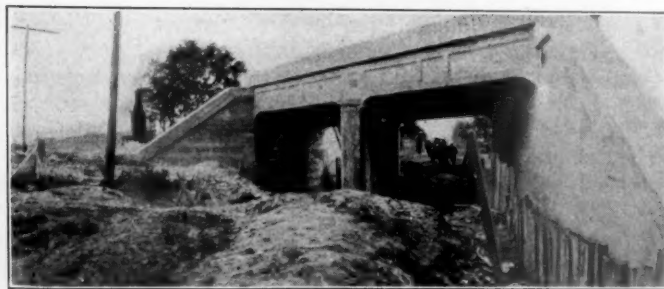
Water stations will be provided at White Lick (mile 13), Lebanon and Frankfort. At the latter point the water facilities will consist of one 50,000 gal. and one 100,000 gal. tank, connected with a water softening plant.

#### Embankments Made from Four Borrow Pits

As previously mentioned, the new line is carried on embankments for much of its length, requiring a large amount of borrow. The grading consists of about 2,700,000 cu. yd. of filling and 230,000 cu. yd. of excavation exclusive of borrow pits. While the lighter fills have been made from side borrow, the general plan has been to secure the material from four large borrow pits located at intervals along the line, pit No. 1 being at mile 3, pit No. 2 at mile 9, pit No. 3 at mile 28 and pit No. 4 at mile 33. Between pits 2 and 3 the grading was light and most of the excess filling material was secured by the side borrow.

The heaviest grading on the line was on the first five miles north of Ben Davis. Through this district the line is entirely on embankments that exceed 26 ft. in height in places. The fill necessary in this section aggregates more than 1,700,000 cu. yd. which was all secured from pit No. 1. In the  $4\frac{1}{2}$  miles north of this section where light cuts aggregating approximately 2 miles in length were made, several large fills were necessary which were made from material secured from pit No. 2.

Pit No. 1 is the one from which the most dirt was taken. It covers an area of about 75 acres. It is located  $1\frac{1}{2}$  miles east of the new line, making the construction of a connecting line necessary. This line was double tracked for the entire distance. To permit the flexible operation of the material trains both north and south of the pit the tracks of the line leading to the pit were spread into a wye at the connection



A Typical Flat Slab Bridge for County Highways

with the new line. A double track crossover was provided just east of the point of convergence on the connection line, this arrangement permitting the trains on either of the connection tracks to reach the new line over either of the wye tracks.

The material in the pit is chiefly clay and existing springs together with the great amount of rain which fell during the season made it necessary to provide an outlet for the water by means of 18-in. tile drains leading to existing drainage ditches east of the pit. The high ground near the center of the pit was utilized for the location of water supply facili-



ties for the shovels and engines, the water being pumped to the tank from a creek in the vicinity.

Two shovels were cut in on opposite sides of the pit, each working toward the high ground in the center. As a shovel progressed with a cut a track was laid close behind it over which it moved back before starting the next cut. After moving back, this track was utilized as a loading track. Working ten hours a day, the two shovels maintained an average output of 3,500 cu. yd. of material per day. The filling material was moved to the embankments in standard gage equipment, the trains consisting of from 12 to 15 12-yd. cars.

The fills were made from trestles, consisting of four-pile



Building the Double-Arch Bridge and Approaches at Prairie Creek

bents capped with logs and braced with three lines of girts. The stringers were 10 in. by 16 in. by 28 ft. long which were salvaged after the completion of the fills. Jordan spreaders were used in spreading the material after unloading from the cars.

The other pits were located adjacent to the new line. Standard gage equipment was used at pits 3 and 4 and narrow gage equipment at pit 2. At pit 1, 3 and 4 the grading outfits were brought in by rail, the connecting tracks also being used as construction tracks. At pit 2 it was impossible to secure such a connection and the equipment was brought in over a highway from Clermont, a station on the Big Four, 1½ miles distant. This was done by laying a standard gage track on a road in sections about 800 ft. long over which the shovel was moved. After the passage of the shovel the rails were moved in for the narrow gage engines and cars. The additional equipment for use in the pit was brought in by wagon.

### The Bridges

Approximately 68,000 cu. yd. of concrete was used in the construction of the bridges and culverts. At highway crossings two designs were followed. Where the headroom permitted, reinforced arches with spans ranging from 30 to 50 ft. were built, and where the headroom was limited flat slabs of reinforced concrete or I-beams protected with concrete and with center columns were substituted. In cities the flat slabs were built in three spans with the supporting columns at the curb lines. At drainage ditches the bridges consist of 30-ft. deck girder spans and concrete abutments, this design being followed to permit the spans being removed for the passage of dredges as required by law.

Both stone and gravel were used in the concrete and in all reinforced concrete ten per cent by weight of hydrated lime was added to the cement. Abutments and wing walls were painted on the back with one coat of tar paint and the arches and flat tops were covered with Barrett, Minwax or Lewis waterproofing. The formation encountered at the bridges was mainly clay which in some cases was soft. The foundation piles were timber, 20 ft. piles being used in most cases, driven from 14 to 18 ft.

With the exception of the labor shortage which has handicapped the contractor throughout the entire work, the construction of the bridges presented no special difficulty. While

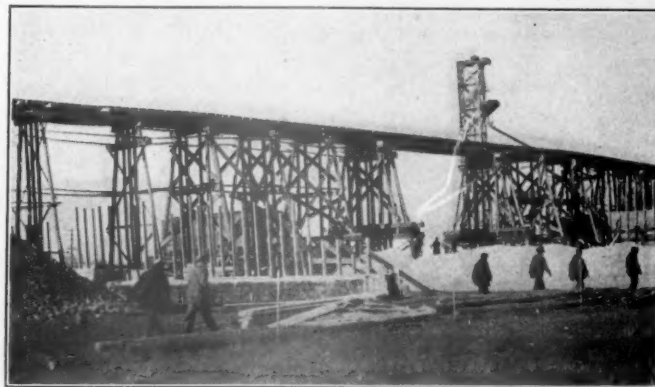
in many instances the materials were delivered to the site on spur tracks laid along the right-of-way from connections with the railroads crossed, it was necessary at places to use teams and wagons. The construction plant consisted of 1-yd. mixers with towers and chutes for placing the concrete in the forms.

A portable plant was used at Lebanon where several bridges were built within a short distance. This plant consisted of a flat car with a tower and elevator at the forward end and a ¾-yd. mixer. A storage bin with a capacity for 24 cu. ft. of material was placed behind the mixer. The floor of the bin was sloped toward the mixer so that the materials might pass by gravity from the bin to the charging hopper. The hoisting engine and the boiler for the mixer were located at the rear end of the car. A locomotive crane handled the materials from the stock pile to the storage bin.

The largest bridge of arch design was built at Sugar Creek. It consists of three 65-ft. elliptical arches. No foundation piles were necessary at this point. Cofferdams of timber sheet piling were used in making the foundation excavation. The water was controlled during the excavation by centrifugal pumps and in order to obviate the possibility of trouble from high water, the work up to the springing line was built as a unit.

The concrete materials were brought in from Frankfort over the new line and unloaded into bins placed beneath the deck of the dumping trestle. The materials dropped by chutes from these bins into small push cars which ran on dinky tracks. The cars were pushed to the mixing plant by hand. The plant was located near the center of the bridge and consisted of a mixer, a tower and chutes. The arches were poured in three sections parallel to the track, each section being completed in a continuous run. Expansion joints filled with felt and asphalt were provided between sections.

The centering for the arches, which was sawed on the ground, was supported on falsework made up of two-story bents with the necessary bracing and wedges. As mentioned, the arches were built in sections. Two rows of piles were driven about 6 ft. apart for each section, the rows being parallel to the bridge. These piles were capped with



Carrying New Line Over the St. Louis Division of the Big Four

12-in. by 12-in. timbers placed at right angles to the bridge. With these timbers as sills three bents were built consisting of posts for uprights and 12-in. by 12-in. timbers for caps. These three bents were thoroughly braced to each other by means of poles. The second story of the falsework consisted of two bents supported on 12-in. by 12-in. sills laid transversely on the caps of the first story bents. Using these bents as supports the arch forms were held in place by pole braces and by wedges placed between them and the forms by means of which the adjustments were made

and the forms were released after the concrete had set.

This line was incorporated early in 1916 and a contract for its construction was awarded about April 1 of that year. The masonry and grading work is now practically complete and the track laying and the ballasting will soon be finished. It is expected that the line will be turned over

to operation for freight traffic during the present winter.

The studies leading to the construction of the new line and the plans for the work were developed under the direction of F. T. Hatch, chief engineer of the Indianapolis & Frankfort Railroad. The contractor for the work was the Dunn-McCarthy Company of Chicago.

## Five Coal-less Days and Ten Heatless Holidays

### Fuel Administration Orders Curtailment of Coal Burning and a Suspension of Industries

WASHINGTON, D. C.

WITH THE EXCEPTION of plants engaged on work deemed particularly essential to the prosecution of the war or the production of food, the manufacturing industry of the eastern part of the United States came to a standstill on January 18 for five days as the result of an order issued on January 17 by United States Fuel Administrator Garfield, adding to the series of "meatless" and "wheatless" days with which the country has already become familiar a period of "coalless" days to be followed by nine "heatless" Mondays on which the use of fuel except by consumers classed as absolutely necessary is prohibited. The shutdown became less complete after the first day because the order was followed by a long list of exemptions, many of which did not become known until after the plants to which they applied had complied with the original order.

Advance notice of the order to cease operations was given out on the evening of January 16 and the order itself was signed on January 17, with the full approval of the President and such members of his cabinet as were consulted but without the advice and consent of the Senate, which only a few minutes after the signing of the order had adopted by a vote of 50 to 19 a resolution requesting its postponement for five days.

The order provided that on January 18, 19, 20, 21 and 22 preference and priority in the use of coal should be given only to a designated list of consumers, in which railroads were first named, whose consumption of coal is absolutely necessary; that during those five days no manufacturing industry, with a few exceptions, should be allowed to operate even if it had its coal supply on hand, and that the use of fuel except by consumers classed as absolutely necessary should be prohibited on Monday of each week from January 21 to March 25.

The exemptions made public on January 18 included a list of about 1,000 plants compiled on information furnished by the Secretary of War and the Secretary of the Navy and heads of other government departments, so that concerns supplying materials under contract to the government which are immediately needed and could be delivered without adding to the transportation congestion might not be forced to cease their production. Various special exemptions were also made. The list included the manufacturers of locomotives for the United States government and American railroads and also manufacturers of gas masks, explosives, rifles, pistols, machine guns and small arms ammunition, important forgings, war essentials needed immediately, Liberty Bond paper, chrome green, linseed oil, destroyers, forgings and boilers for destroyers, seamless tubes less than 1½ in. in diameter, condenser tubes for destroyers, aircraft and signal corps products, emergency navy contracts, products for the shipping board, emergency fleet orders and emergency government work. The further special exemptions included manufacturers of uniforms, optical glass and tents and equipment. The exemptions applied, however, only to the

manufacture of the materials specified and not to other products that might be made in the same plants. There were no general exemptions of industry.

The order aroused a storm of protest on the day following its announcement and on the first day of its effect, but after the exemptions had been announced, and the President had endorsed it, there was less opposition.

#### The Order and the Railroads

Whether the order was primarily intended for the conservation of coal or whether its chief object was to serve as a partial embargo on new freight offerings to the overburdened railroads, has been a point of lively controversy in Washington and particularly in Congress, which devoted most of its sessions to the discussion of the subject on January 17 and 18. Mr. McAdoo was asked the direct question during the testimony before the Senate Committee on Interstate Commerce on Monday, as to whether it was a coal order or a transportation order and replied that it was both. He said he had nothing to do with formulating it but had agreed to it and thought it would be beneficial and that an immense improvement had already resulted.

Interest in the administration railroad control bill was temporarily suspended for a time while Congress joined with the rest of the country in criticising the Fuel Administration's embargo on manufacturing. It soon became apparent, however, that while Fuel Administrator Garfield took full responsibility for the order, the authority of the entire administration was back of him. While the railroad administration at first took the position that its interest in the question was rather incidental, its attitude toward the effect of a virtual embargo on most kinds of new freight for five days, which would enable it to catch up on its coal movement and clear up congested terminals, was plainly one of more than equanimity. Freight Moving Week having turned out inauspiciously, as the result of the unprecedentedly severe weather, which the still unco-ordinated government weather administration had been unable to deal with successfully, a series of days during which coal could not be used for the manufacture of additional demands upon cars and locomotives while the director general was completing his organization, was obviously a source of considerable relief. Mr. McAdoo said he did not care whether it was called an aid to the director general or not, provided its result was beneficial.

Dr. Garfield was somewhat more outspoken in his announcements of his efforts to co-operate with the railroad administration. "The movement of coal in transportation," he said, "must be so directed as to aid the director general of railroads in dealing with the railroad emergency created by the recent blizzard conditions."

While Dr. Garfield also emphasized the desire to keep domestic consumers of coal warm he laid the greatest stress, both in his testimony before the Senate Committee on Man-



ufactures, which called on him to explain the order, and in his prepared statements to the public, on the effect it would have on transportation conditions.

In a statement accompanying the order, describing the conditions which he considered made it necessary, Dr. Garfield said:

#### Statement by Dr. Garfield

"The most urgent thing to be done is to send to the American forces abroad and to the Allies the food and war supplies which they vitally need. War munitions, food, manufactured articles of every description, lie at our Atlantic ports in tens of thousands of tons, while literally hundreds of ships, waiting loaded with war goods for our men and the Allies can not take the seas because their bunkers are empty of coal. The coal to send them on their way is waiting behind the congested freight that has jammed all terminals.

"It is worse than useless to bend our energies to more manufacturing when what we have already manufactured lies at tidewater congesting terminal facilities, jamming the railroad yards and sidetracks for long distances back into the country. No power on earth can move this freight into the war zone where it is needed until we supply the ships with fuel.

"Once the docks are cleared of the valuable freight for which our men and associates in the war now wait in vain, then again our energies and power may be turned to manufacturing, more efficient than ever, so that a steady and uninterrupted stream of vital supplies may be this nation's answer to the Allies' cry for help!

"It has been excess of production, in our war-time speeding up, that has done so much to cause congestion on our railroads; that has filled the freight yards to overflowing; that has cluttered the docks of our Atlantic ports with goods waiting to go abroad. At tidewater the flood of freight has stopped. The ships were unable to complete the journey from our factories to the war-depots behind the firing-line.

"Added to this has been the difficulty of transporting coal for our own domestic needs. On top of these difficulties has come one of the most terribly severe winters we have known in years.

"The wheels were choked and stopped; zero weather and snow-bound trains; terminals congested; harbors with shipping frozen in; rivers and canals impassable—it was useless to continue manufacture and pile confusion on top of confusion.

"A clear line from the manufacturing establishments to the seaboard and beyond; that was the imperative need. It was like soldiers marching to the front. The men in the foremost ranks must have room to move.

"More than a shock was needed to make a way through that congestion at the terminals and on the docks so that the aid so vitally needed by the Allies could get through.

"The incidental effect of this transportation situation on coal production has been disastrous. There is and always has been plenty of fuel, but it cannot be moved to those places where it is so badly needed while railroad lines and terminals are choked. Throughout the coal fields scores, even hundreds, of mines are lying idle because of railroad inability to supply the cars to carry away their product. Coal mines cannot operate without cars. Cars cannot be supplied while the railroads are crippled by the present freight congestion, which keeps idle cars lying useless in the freight yards.

In the past week the production of coal has been disastrously reduced. Reports in some cases have shown 90 per cent of the mines in certain fields closed completely for lack of cars.

"This is war! Whatever the cost we must pay it so that in the face of the enemy there can never be the reproach

that we held back from doing our full share. Those ships laden with our supplies of food for men and food for guns must have coal and put to sea."

#### Order Endorsed by President Wilson

President Wilson also issued a statement saying that he had been consulted by Dr. Garfield before the order was issued and fully agreed with him that it was necessary.

"It is absolutely necessary to get the ships away," he said. "It is absolutely necessary to relieve the congestion at the ports and upon the railways, it is absolutely necessary to move great quantities of food, and it is absolutely necessary that our people should be warmed in their homes, if nowhere else, and half-way measures would not have accomplished the desired ends.

"If action such as this had not been taken, we should have limped along from day to day with a slowly improving condition of affairs with regard to the shipment of food and coal, but without such immediate relief as had become absolutely necessary because of the congestions of traffic which have been piling up for the last few months."

In a later statement apparently intended as an answer to those who had advocated cutting off the coal supply of non-essential industries rather than a general temporary curtailment, Dr. Garfield said in part:

"Industry is in an unbalanced condition. We lack many essentials—food, clothing, fuel. We have piled up enormous stores of things not essential to life but very essential to war. We have piled them so high on our docks and in our storehouses that the ships available cannot carry them away as fast as they pile up.

"The food supply is threatened to an even greater degree than the fuel supply. This condition is in large part due to the congestion that at many points holds the loaded cars in its grip.

"To single out industries not engaged to some extent in war manufacture is to select industries which in the aggregate will bring relief only if suspended indefinitely. To require all industries except a comparatively small part to cease for a few days quickly accomplishes the desired result and permanently injures none.

"The order as it stands puts all industry on an equal footing, favoring none and avoiding unfair competition, but this reason alone is not sufficient. This reason, plus the fact that the order will put coal in the empty bins of the people, will save coal, will aid in breaking up congestion of traffic and in furnishing an adequate supply of coal to the people who need it and to the ships which cannot sail without it—these are sufficient reasons and justify the order.

"Only those industries producing necessary war material that can be promptly delivered are permitted to operate during the suspension period. To permit industries with a coal supply on hand to operate would allow many of the least essential to continue while some of the most essential would be compelled to stop.

"Moreover, to allow those fortunate enough to possess a coal pile to continue would result in adding to the traffic congestion, and, unless they also are suspended at a later period, the needed saving in consumption of coal would not result. To have delayed the application of the order would only have added to the congestion. It is no condemnation of industry to say that each would have striven to the utmost to increase its supply of coal and other raw material during the days prior to the application of the order."

A report was published to the effect that the fuel order would be followed by another order from the director general of railroads placing an embargo against the transportation of non-essential freight, but it was authoritatively stated that nothing of the kind was contemplated by Mr. McAdoo. The director general considered such a step unnecessary because the fuel order itself gave the railroads a breathing

spell, and, while he considered Dr. Garfield's order in the light of a necessary surgical operation, he thought its results would be beneficial in the end. He hoped that with an improvement in weather conditions such as was reported east of the Allegheny mountains on Friday, the more effective use of freight cars resulting from the increased demurrage charges, which Mr. McAdoo believes will increase freight car efficiency 25 per cent, and with the assistance afforded by the delivery of 700 additional locomotives to the eastern roads, the roads will be enabled to handle all the freight offered without embargoes, while essential freight will be given preference. Mr. McAdoo has made it plain that he does not intend to cut off non-essentials unless the necessity for it should become more apparent than it has so far.

Mr. McAdoo sent the following telegram on January 18 to the presidents of all railways in eastern and southern territories:

"In view of the order of the Fuel Administrator for a five-day cessation of industrial activity in this territory for the purpose of accumulating and distributing an ample fuel supply, I urge and direct that every possible effort be made by the railroads to move coal and to co-operate to the limit with the Fuel Administration for the accomplishment of the desired end.

"I hope that the officers and employees of the railroads will do their part so effectively that there may be no further occasion for interruption of the industrial and normal activities of the nation."

On Saturday the fuel administrator, at the request of A. H. Smith, assistant director general of railroads, made arrangements looking to the pooling of facilities for bunkering ships at the port of New York. The assistant director general, in a telegram to the fuel administrator, set forth that some piers which were supplied with coal had no barges to transport the coal to vessels in the stream, and that other piers having no coal were well supplied with barges. After a consultation with Chairman Hurley, of the United States Shipping Board, the fuel administrator advised the assistant director general that a personal representative of the Shipping Board would be sent at once to New York to take charge of the proposed pooling arrangement. J. W. Searles, personal representative of Fuel Administrator Garfield at New York, was directed to extend his full co-operation in perfecting the plan.

General compliance and almost complete co-operation in the enforcement of the fuel administration regulation curtailing industrial use of fuel were reported to the United States Fuel Administration on Saturday. Railroad officials reported generally improved transportation conditions in the eastern part of the country. The reports indicated that the way was rapidly being cleared for the movement of coal for the bunkering of the ships now held up at Atlantic ports and for keeping the country warm. Improvement was also noted in the central west, despite the continued zero weather, which has been impeding railroad operations.

Reports from the Baltimore & Ohio showed a car supply of 1805 cars available for coal mines in West Virginia. This was an increase of 400 over the number available the day before. On the first day the restrictive regulation was effective the Baltimore & Ohio moved 1100 loaded coal cars consigned in accordance with the order out of the West Virginia coal fields. This was the best movement of coal that this railroad company has shown in that district in 60 days.

From Philadelphia it was reported that rail conditions generally on the lines operating between Altoona and Philadelphia, which have been badly congested, were much improved.

Reports direct to the fuel administration showed that coal in transit consigned to or already arrived at tidewater

points for the bunkering of ships destined to the American forces in Europe and to the nations associated with the United States in the war were more than sufficient to bunker the ships now in port and supplies sufficient to insure the prompt bunkering of vessels for some time to come were en route. Upwards of 300,000 tons of coal was in cars for bunkering and is on the way to South Atlantic ports. Approximately 150,000 tons is in cars en route for northern Atlantic ports. With the improved rail conditions this coal should rapidly fill the requirements of the vessels now awaiting bunkers.

At the request of the United States Fuel Administrator, the director general of railroads placed an embargo on the use of open-top coal cars for the shipment of products other than fuel.

The fuel administration was notified that 3,000 cars of coal were moving on one railroad to the east; 1,000 was consigned to tide-water for bunkering ships and 2,000 was on the way to domestic consumers.

On Sunday reports from the mine fields indicated that snow and zero weather were interfering with railroad movement of coal, but that empty coal cars were moving promptly back to the mines. Weather conditions in the middle west, particularly, were reported as interfering with general railroad operation. Deep snow and as low as 20 degrees below zero in some parts of the country combined to make train movements difficult.

The improvement in the weather did not continue, however, and on Monday Dr. Garfield announced that while more fuel had been made available for domestic consumers and bunker coal was moving to tidewater in sufficient volume to supply transatlantic shipping, the third aim to be accomplished, the clearing of railroad congestion, had not yet been attained because of adverse weather conditions.

The Pennsylvania Railroad declined to accept any general freight for shipment and other roads placed local embargoes but Mr. McAdoo declined to order a general embargo.

Disappointed with the results of the five days' suspension of industry, Fuel Administrator Garfield has recommended to Director General McAdoo that an embargo be placed for a few days on general freight except fuel and food. Mr. McAdoo was not inclined to favor it and a committee has been appointed consisting of Howard Elliott and A. G. Gutheim, representing the railway administration, to work with two representatives of the fuel administration in developing a plan for eliminating the cross hauling of coal by restricting the shipments to the zones of production.

The geological survey reports that the 1917 production of bituminous coal was 544,000,000 tons, or an increase of 8.3 per cent over 1916.

On Tuesday the total number of ships coaled at the New York harbor was 24, and all of the most important ships had been supplied and were sent on their way. The number of ships waiting on Wednesday morning to be coaled was 80; not all of these, however, were scheduled to sail at once.

W. B. Pollock, marine superintendent for the railroads' committee at New York, said on Tuesday that the loading of 353 empty lighters had been seriously hampered at the loading points by the desertion of large numbers of laborers, practically all of whom are Italians and Poles. On Tuesday, when a light snow was falling nearly all day, 1,060 men refused to work on the ship bunkering barges. In addition hundreds of men quit work for the day, at least, at the docks in New Jersey.

The men engaged in bunkering steamers could earn \$200 a month by working full time. But they are paid on the hourly basis, and they lie off whenever the weather is bad. The pay is 55 cents an hour for day work, 80 cents an hour for night work, and \$1.05 an hour on Sundays.





C. H. Markham.



A. H. Smith.



R. H. Aishton.

## McAdoo Appoints Three Regional Directors

Railway Wage Commission to Investigate Labor Questions.

Weather Interferes with Transportation

**T**HE DIRECTOR GENERAL OF RAILROADS, W. G. McAdoo, on January 18, issued General Order No. 4 announcing that for purposes of operation the railroads of the United States will be classified as Eastern, Southern and Western Railroads, defined as follows:

**Eastern Railroads.**—The railroads in that portion of the United States north of the Ohio and Potomac rivers and east of Lake Michigan and the Indiana-Illinois state line; also those railroads in Illinois extending into that state from points east of the Indiana-Illinois state line; also the Chesapeake & Ohio, the Norfolk & Western and the Virginian railways.

**Southern Railroads.**—All railroads in that portion of the United States south of the Ohio and Potomac rivers and east of the Mississippi river, except the Chesapeake & Ohio, Norfolk & Western and the Virginian railways; and also those railroads in Illinois and Indiana extending into those states from points south of the Ohio river.

**Western Railroads.**—All railroads not included in the above definitions and, broadly speaking, all railroads in the territory west of Lake Michigan and of the Indiana-Illinois state line to the Ohio river and west of the Mississippi river from the Ohio river to the gulf of Mexico, excepting those railroads in Illinois included in Eastern Territory, and those railroads in Illinois and Indiana included in Southern Territory, as above stated.

A. H. Smith, president of the New York Central, is appointed regional director, with office at New York, in charge of the operation of Eastern railroads.

C. H. Markham, president of the Illinois Central, is appointed regional director, with office at Atlanta, in charge of the operation of Southern railroads.

R. H. Aishton, president of the Chicago & North Western, is appointed regional director, with office at Chicago, in charge of the operation of Western railroads.

Orders issued by the gentlemen named in their capacity as regional directors will be issued by authority of the director general and will be respected accordingly.

### Railroad Wage Commission Appointed

Director General of Railroads McAdoo has announced the appointment of a Railroad Wage Commission to make a general investigation of the subject of railroad wages in the United States. The director general named as members of

the commission Franklin K. Lane, Secretary of the Interior, Charles C. McChord, member of the Interstate Commerce Commission, J. Harry Covington, chief justice of the supreme court of the district of Columbia, and William R. Willcox of New York. The members of this commission are all men who have had experience in dealing with problems like that referred to it.

The commission held its first meeting at Washington on January 21 and organized by electing Secretary Lane as chairman. W. A. Ryan was appointed secretary of the commission. It was decided to appoint a board of four examiners and a statistical board of three members. Public hearings will be held at Washington and it was stated that some results could be expected in about 60 days.

Secretary Lane was for eight years a member of the Interstate Commerce Commission, and was also the chairman of the board, consisting of himself, the Secretary of Labor, Daniel Willard and Samuel Gompers, which brought about the wage agreement between the railroads and the four railroad brotherhoods last year pending the adjudication of the Adamson law.

Commissioner McChord was formerly chairman of the Kentucky Railroad Commission. During his eight years of service as a member of the Interstate Commerce Commission he has been largely concerned with those regulatory laws which directly affect railroad employees, and during 1916 had charge of the investigation of car shortage problems.

Judge Covington, prior to his appointment as a federal judge in 1914, was a member of Congress, serving on the Committee on Interstate and Foreign Commerce, the committee which considers all railway legislation in the House of Representatives. He was the President's personal representative last summer on a mission to the Pacific Coast states in connection with labor trouble existing there.

Mr. Willcox was chairman of the Republican National Committee, but resigned after receiving the new appointment. After serving as postmaster of New York City, he was appointed by Governor Hughes chairman of the New York Public Service Commission for the First District, and served upon that body for six years.

The commission has been appointed with a view to determining the wages for the different classes of labor upon the railroads, including not only the train service employees that have presented specific demands but the other classes,

many of which had presented demands to individual railroads. It will begin its work at once, and will report to the director general, giving its recommendations in general terms as to changes that should be made. Upon this report the director general will make a decision.

In dealing with such a complex problem as railroad wages, the powers of the commission must be very broad if it is to report a satisfactory result. It is therefore authorized to make a general investigation of the whole field of railroad labor—the compensation of persons in the service of the railroads, the relation of railroad wages to wages in other industries, the conditions in different parts of the country, the special emergency respecting wages which exists at this time owing to war conditions and the high cost of living, and the relation between different classes of railroad labor.

The creation of this commission is the culmination of a large number of complaints and demands of employees which have been pending before the railroad managers for some time past. These complaints and demands were brought to the attention of the director general shortly after the assumption of the operation of the railroads by the government. They came in all forms, from various classes of railroad labor organizations and from various groups of unorganized employees of the railroads.

President Wilson sent the following letter to each member of the commission:

"May I not assure you of my appreciation of your acceptance of the invitation extended to you by the director general of railroads to serve as a member of the important commission he has appointed to inquire into the question of wages of railroad employees in the United States?"

"This is one of the most important problems of the moment and is worthy of the unselfish and disinterested service you have so patriotically undertaken to render."

In the case of the brotherhoods an agreement was reached at a recent conference between their representatives and Mr. McAdoo that whatever decision was made would become effective as of January 1, 1918.

#### Shippers Confer with Director General

A special committee of the National Industrial Traffic League called on Mr. McAdoo on January 17 to offer their co-operation and to discuss the relations between shippers and the railroad administration. They made a suggestion that a representative of the shipping public be appointed to the director general's Advisory Board, but Mr. McAdoo told them that the board represented the entire public. They also suggested a change in the new scale of demurrage rates which went into effect on January 21, proposing instead of the progressive scale ranging from \$3 to \$10 a rate of \$5 for the first few days and \$10 thereafter, to obviate the difficulties caused when cars on which demurrage has accrued are switched without reference to the number of days they have been detained. The shipper or consignee would naturally prefer to have the most expensive car moved first but it is difficult to handle the cars in that order. The National Industrial Traffic League proposed a similar change last year after the scale of \$1, \$2, \$3, \$4 and \$5 had been in effect for a time and the railroads agreed to substitute the flat rate of \$2 for the first three days, increasing to \$5 thereafter. The shippers also objected to the abolition of the average agreement and the bunching rule. The suggestions were referred to Edward Chambers, Mr. McAdoo's traffic advisor.

#### State Commissions Reassured

The authority of state railroad commissioners is not impaired by the federal control of the railroads, Mr. McAdoo told a delegation of representatives of state commissions at a conference in Washington on January 16. The delegation was headed by E. C. Niles, of New Hampshire, presi-

dent of the National Association of Railway and Utilities Commissioners, and they expressed to Mr. McAdoo their fears that it might be the intention to nullify their authority, as the President's proclamation declared that the railroads shall remain subject to all *existing* statutes and orders. They also said that in some instances railroads had already refused to obey their orders; but they were assured that unless and until the director general chose to exercise his paramount authority their status remained unchanged. Mr. McAdoo advised them, however, not to impose requirements involving capital expenditure except in cases of absolute necessity and the commissioners promised their co-operation in every way.

#### Cars Wanted for Corn Loading

Representative Medill McCormick of Illinois has placed before Mr. McAdoo a letter from Food Administrator Hoover on the need for sending box cars west for loading with corn. It was stated that the country elevators are filled and that corn is rotting in the fields because so many cars of western roads are in the east. Mr. McCormick suggested the appointment of an experienced railroad executive to devote his attention to the corn movement. Mr. Hoover's letter said in part:

"It does not appear to me that the movement of this most critical and essential foodstuff necessarily conflicts with the movement of coal. Grain moves in box cars and coal in open top cars. I am informed that a large number of box cars are daily loaded with pianos, furniture, graphophones, beer, whisky, etc., which are not so essential at the moment as grains. It is estimated that the eastern roads have anywhere from 20,000 to 40,000 box cars belonging to the grain roads and unless these can be returned and put into their proper employment there is little solution of the problem."

#### New Locomotives Ordered Diverted to Eastern Lines

For the purpose of increasing the supply of locomotives on the eastern roads, many of which are conspicuously short of power, Mr. McAdoo has ordered the locomotive builders to deliver all locomotives turned out in January, February and March, on orders from the railroads, about 700 in all, to be turned over to specified eastern lines, regardless of the road that ordered them. About 150 are to be delivered in January, about 250 in February and 250 in March.

Mr. McAdoo has been in conference with officers of the locomotive companies in the effort to secure early delivery of engines which have been ordered and in making arrangements for obtaining the use of locomotives ordered by the Russian government. As one of the great sources of difficulty has been the shortage of labor for repairing locomotives, efforts have been made to transfer men from the western and southern lines to the eastern lines.

#### Blizzards Interfere with Freight Moving Week

Weather conditions throughout the eastern district have continued to interfere with the efforts of the railway managers and the director general to clear up congestion. The efforts to make last week a general freight moving week were rendered almost fruitless by the continuance of blizzards in the middle west and below zero weather in the east, and while the five-day shut-down of manufacturing plants resulted in some improvement and certainly prevented congestion from increasing as it otherwise might have done, its results were far less than had been expected. On Monday night Mr. McAdoo received the following report from A. H. Smith:

"Very severe weather over entire Eastern District. 9 below in New England. 31 below in Pennsylvania. 20 below in Northern New York State, and snowing and blowing. 15 below Ohio. 5 below West Virginia.

"There was severe shortage of labor at engine terminals



and many men failed to report to work. Many of those who did report went home on account of severity of the weather, interfering with train operations and slowing up things very much.

"There is much ice in the yards, which is interfering with switching. So far as possible we are getting labor to pick it out.

"At 10:00 o'clock this morning, weather clearing and moderating and situation is improving.

"We are concentrating on getting empties to the mines and movement of coal out, also movement of foodstuffs east of Chicago, which must be kept up.

"Anthracite producing regions still affected by the freezing, and improvement can only come with higher temperatures.

"Accumulation of freight held out for New York continues to show reduction.

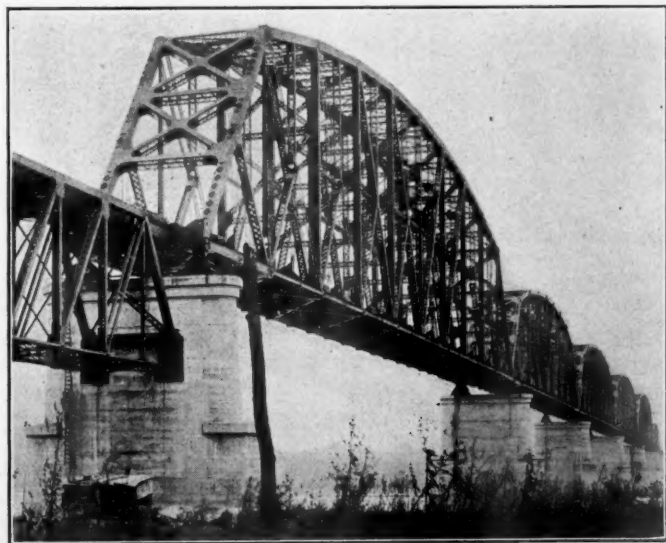
"Harbor conditions improving.

"Steamers bunkered 14, with total of 10,320 tons."

On account of the extremely severe weather, which has particularly affected operations of railroads crossing the Allegheny mountains, Director General McAdoo on Wednesday, upon recommendation of Regional Director Smith, authorized him to place an embargo on all freight, except food, fuel and such war munitions and war supplies as are specifically approved by the War Department, upon the Pennsylvania Lines East of Pittsburgh, Baltimore & Ohio east of Ohio river, and Philadelphia & Reading for the purpose of enabling these lines, which are the heaviest bituminous coal carriers, to continue specializing upon coal for the double purpose of relieving the acute conditions in New England and the Harbor of New York and elsewhere, and to provide empty cars for the mines and coke ovens. This embargo is a temporary one. It should last but a few days if the weather moderates.

### Metropolis Bridge Now in Service

THE PHOTOGRAPHS SHOW TWO VIEWS of the recently completed Ohio river bridge which connects the Chicago, Burlington & Quincy and the Nashville, Chattanooga & St. Louis at Metropolis, Ill. This structure was



View of the Bridge from the Kentucky Side, the Long Span in the Foreground

recently opened to service and affords a new all-rail route for traffic from the northwest to the southeast. The bridge is notable primarily as containing the longest simple truss

span in the world, 720 ft. between end bearings. Various phases of the progress on this structure were covered in the *Railway Age Gazette* of July 23, 1915, page 160; May 12, 1916, page 124; and September 8, 1916, page 399.

In addition to the use of the long simple span, a form of construction adopted because of the impracticability of securing rock foundation, mention must be made of another departure from usual practice, the use of silicon steel for the main compression members. The great span was swung from the falsework on December 11, 1916, its completion being followed during 1917 by that of the four other main spans, each 555 ft. long, but of the same general type of construction as the main span. The north approach 1,590 ft. long and the south approach 600 ft. were completed previously. The erection of the record span on falsework involved special



The Portal of the 720-ft. Span

problems requiring the use of more unusual equipment and methods, such as a 150-ton locomotive crane having a maximum boom length of 135 ft. and the 300-ton hydraulic jacks used in lowering the span free from the falsework.

The substructure also involved noteworthy features that were brought about primarily through the necessity for a large spread of the footings because of the low bearing pressure permissible on the available foundation material. Structural steel and reinforced concrete entered largely into the design of the caissons and large timber pontoons were used to float the caissons into place.

The work on this structure was started in the early part of 1915. The substructure was built by the Union Bridge & Construction Company of Kansas City, and the superstructure was fabricated and erected by the American Bridge Company. The bridge was designed and its construction started under the direction of C. H. Cartledge, late chief engineer of the Paducah & Illinois Railroad and bridge engineer of the Chicago, Burlington & Quincy. Ralph Modjeski, Chicago, Ill., was consulting engineer on the project and took over the execution of the work following the death of Mr. Cartledge.

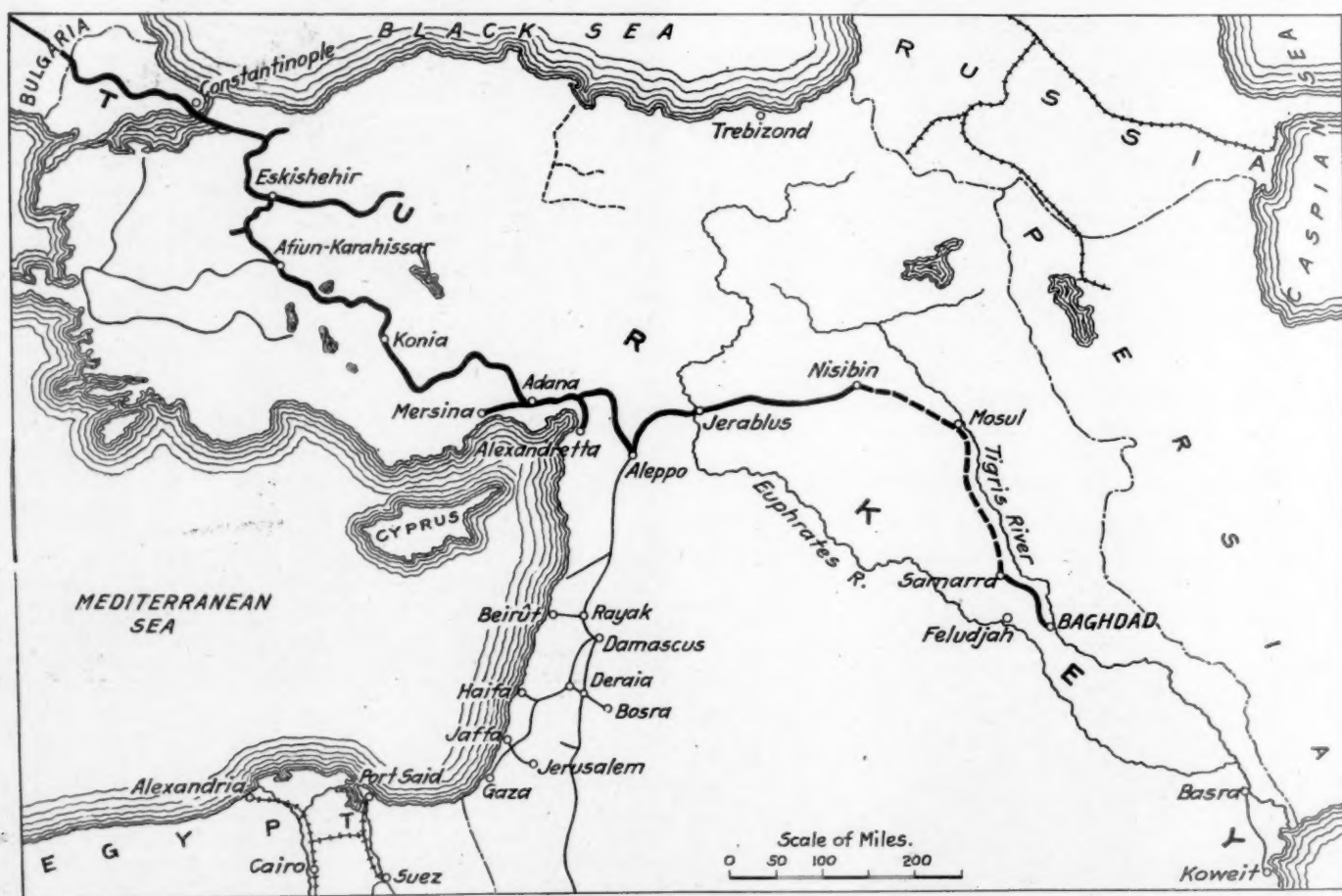
# The Baghdad Railway and Its Part in the War

## The Mesopotamia Campaign Has Hindered the Completion of This Threat Against Egypt and India

THE BRITISH CAMPAIGNS in Palestine and Mesopotamia, which occupy a prominent place in the news of the day, may be observed in a new light when it is considered that one of the urgent reasons for them is the forestalling of the completion of the Baghdad Railway and its being put into effective military use as a route towards the Suez Canal and towards India. This fact was clearly brought out by H. Charles Wood in an illustrated lecture on the Baghdad Railway in the war, delivered before the American Geographical Society in New York on January 8. Mr. Woods is a fellow of the Royal Geographical Society

follow a line which would necessitate the shortest sea passage. The other, and from political and military points of view, far more important reason for the change of plan was that German influence in Turkey was entirely directed toward the construction of a Baghdad Railway which would not be easily attacked by a group of powers possessed of the command of the sea.

Indeed, the Germans have always realized the importance of the fact that Constantinople, the Bosphorus and the Dardanelles were and are interdependent and that in the defense of the straits and the construction of railways there existed



The Baghdad Railway\*

and an author of several books on the Near East. An abstract of his paper follows:

In opening his lecture Mr. Woods briefly referred to the earlier schemes for the construction of a railway from the Mediterranean to the Persian Gulf—schemes which were more or less dropped in 1876 when the British purchased shares to the value of \$20,000,000 in the Suez canal. From that time onward two reasons gradually led to the connecting not of the Mediterranean, but the Bosphorus with the Persian Gulf. The first of these was that from the moment of the opening of a through railway to Constantinople in 1888, the overland route to the Persian Gulf was naturally destined to start from the Turkish capital and therefore to

a sort of set-off to British sea power. Thus while a line starting from the Mediterranean would have been valueless to Turkey or Germany as a means of through communication between East and West or vice versa, a railway only broken at Constantinople gives to the enemy an iron road, the value of which is one of his principle assets in the war. In short, so long as the forts of the straits remain intact the Sultan and his allies enjoy the advantage of naval supremacy in a limited area—the Bosphorus, the Sea of Marmora and in the Dardanelles—without the possession of a fleet.

### Counteracting British Sea Power

That this question of counteracting British sea power has never been forgotten by the Germans is also clearly demonstrated by the fact that they objected to a modification in

\*Map adapted from a similar map in the National Geographic Magazine. Opportunity was lacking to compare it with the map shown by Mr. Woods at the lecture.



the original route to be followed by the Baghdad Railway, a modification destined to have taken the main line through Alexandretta and Aleppo instead of by the more northerly route through Bagche. This modification, which was strongly advocated in many quarters after the Young Turkish Revolution of 1908, would have had the dual advantage of placing Alexandretta and Aleppo on the main line, and also of taking the railway, not through the heart of the Amanus mountains, but by a more southerly route which would have minimized the course of construction. But had it been accepted, such a change would have meant that instead of the railway going within about ten miles of the coast, it would have run for a good many miles actually along the sea shore. In case of war, therefore, there would have been a much greater menace to the Turkish and German communication from the sea; for while the section of the railway in the neighborhood of the Gulf of Alexandretta is still the most easy of attack, that attack would now constitute a far larger undertaking than were the line to have run close to the water's edge.

### The Route

Before entering into a detailed account of the history, geography and construction of the Baghdad Railway, Mr. Woods went on to give a general account of the present facilities provided by that line. Starting from Scutari opposite Constantinople, since the recent opening of the Taurus and Amanus tunnels through communication has been established as far as a junction located about ten miles to the north of Aleppo. From here the northern prong, or Baghdad Railway proper, continues in an easterly direction, certainly as far as Helif, and probably at least to Nisibin—thus making about 1100 miles of line in working order. At the other, or Baghdad end, the railway has been completed in a northerly direction for 75 miles, and as far as Samarra. This means that out of the total distance of approximately 1,500 miles from Constantinople to Baghdad, nearly 1,200 miles can be accomplished by train. Moreover of the remaining 300 miles not more than about 150 have to be covered by road, for the rest can be accomplished in boats and rafts floated or sailed down the River Tigris from Mosul. In addition, as the railway now crosses the Euphrates at Jera-belus, there is an alternative means of communication with Mesopotamia by way of that river as far as Feludjah, now connected by a light railway with Baghdad. The military advantages which have and are to accrue to Turkey in her Mesopotamian campaign are therefore obvious. But, in addition, the Baghdad Railway now also provides the easiest and quickest means of communication between Constantinople and northeastern Asia-Minor, for the distances to be covered by road from its present terminus, near Nisibin, are less than those which otherwise have had to be traversed from Angora—formerly the nearest point in railway connection with Constantinople.

From Aleppo the great southern prong which is not part of the Baghdad system proper runs through Damascus to Deraia. From there two roads proceed southwards. The first is the Hedjas line which nominally goes as far as Medina. The second bends in an eastern direction towards Haifa, but before reaching that point turns south near Nazareth, ultimately extending as far as El Auja a few miles to the southwest of Beersheba. Although there is at least one break of gage at Rayak, not at Aleppo, as is sometimes stated, the strategic importance of these lines, some of which have only been built since the beginning of the war, is enormous. They rendered possible the formerly threatened attack upon Egypt, and they enabled the Turco-Germans to bring up the reinforcements with which they so strongly opposed the British advance at southern Palestine. That this advance has now been successfully accomplished, is a matter of enormous political and military importance. In

addition to giving the British a base on the northeast of the desert, the occupation of Jerusalem and of its neighborhood provided them with a good jumping-off place for future operations.

### The History of the Project

In 1888 the only four railways existing in Asia-Minor were completely, or at least practically, in the hands of the British capitalists. Due, however, to the gradual development of Germanic influence in the Near East, all except one of these lines had passed out of British control at the beginning of the war, and the Germans dominated the communications in the Asiatic dominions of the Sultan.

In 1893 they obtained power to prolong the railway from Eski-Shehr to Konia thereby establishing connection with the railway from Smyrna to Afium Karahissar. This connection was of considerable value in the Dardanelles campaign, for it was by way of this line and by its branch to Panderma on the Sea of Marmora that the Turks were able to convey many of their reinforcements to the immediate neighborhood of the southern shores of the Straits. This resulted in the substitution of a very short sea trip for a longer voyage from Constantinople to the Peninsula of Gallipoli—a longer voyage which was dangerous owing to the presence of allied submarines in the Marmora.

From the time of the opening of the railway to Konia in 1896 the German plans became more definite and precise. A verbal promise having been given in 1898, the final concession for the Baghdad line was secured in 1903. It gave not only the right of the construction of a line from Konia to Basra, but it also authorized the building of several branches and the construction of ports at Baghdad, Basra and at some point on the Persian Gulf. It laid down the financial arrangement to exist between the government and the company, which included a kilometric guarantee of \$3,100 per kilometer.

The completion of the first section of the line from Konia to Poulgurlu was followed by a prolonged delay. This was due partly to the fact that the second or Taurus section was the most costly of construction of the whole line and partly to the international complications which arose in providing the necessary guarantees and to the possibility of international co-operation in the scheme. Even after the signature of the necessary documents in June, 1908, there was a further delay owing to the conditions created by the Young Turkish Revolution of the following month.

After carefully describing the difficulties and beauties of the Taurus section and showing that the railway follows not the ancient route by way of the Cilician Gates but a more easterly line by way of the valley of the Chakut Su, Mr. Woods took up the enormous importance of the concession granted to the company in 1911 for the construction of a branch to the port of Alexandretta. That concession finally disposed of the idea of a modification in the original route—a modification which would have taken the main line of the coast through Alexandretta to Aleppo instead of by the present more northerly line through the Amanus. Moreover the rights then acquired really amounted to a lease of the port of Alexandretta and to an arrangement almost to be compared to that formerly possessed by the Germans at Kiao-Chao. Commercially speaking, too, the acquisition of the port of Alexandretta was of great importance, for it removed all danger of competition for the Baghdad Railway in this area.

In addition to their rights in regard to Alexandretta, the new conventions made between the Ottoman Government and the Germans in 1911 made a provision for the building of a line from Helif to Baghdad. At the same time the company more or less renounced its right to the construction of the section from Baghdad to the Persian Gulf. But were it not that the war can hardly fail to obliterate and do away

with many of the more important results which preceded and followed the signing of this agreement, those events might be possessed of political consequence, the significance of which it would be impossible to exaggerate. It came almost directly after the meeting of the Czar with the Emperor at Potsdam in November, 1910, a meeting during which the relations existing between Russia and Germany were temporarily adjusted. Though the exact nature of that agreement was not known until afterwards, it was certain that Russia agreed no longer to oppose the construction of the Baghdad Railway, and either herself to build or to allow the Germans to build a line from Khanikin—the terminus of a branch already agreed upon between Turkey and the Baghdad Company—to Teheran. As compensation for this the Russian position in northern Persia was recognized by Germany. It remained then for Berlin to negotiate with England and France for agreements concerning future developments in their respective spheres.

The Tripoli War of 1911 and the Balkan War of 1912 were not, however, favorable periods for negotiation, and it was thus only in 1913 that Turkey in agreement with Germany dispatched to London the ex-Grand Vizier—Hakki Pasha—to try to bring about agreements to be drawn up between the foreign office, the German Embassy and the Ottoman Embassy—agreements to settle the outstanding differences as regards the Baghdad-Persian Gulf section and other cognate matters of river transport in these regions. This agreement peaceably presupposed a continuance of friendly and peaceful relation between Turkey, Germany and Great Britain, and it is believed that it was practically already concluded when in August, 1914, Great Britain found herself compelled to declare war on Germany, Turkey subsequently throwing in her lot with the enemies of this country.

#### The Service Called For

Turning to the actual facilities which the railway provides or which it might provide for travel, Mr. Woods said that the agreement with the company stipulated for the provision of a fortnightly express train between Constantinople and the Persian Gulf, and vice versa. This train was to run at an average speed of about 28 miles an hour, including stops, for the first five years from the opening to traffic of the whole of the main line, that speed subsequently to be increased to 37 miles an hour including stops. This meant that were the express train to run at its lower speed the journey from Constantinople to Baghdad would be accomplished in about 54 hours, and from the Turkish capital to Basra in about 66 hours. Taking the pre-war time necessary for the journey from London to Constantinople by the "Orient Express," and allowing for a very short delay at the latter place, theoretically it would be possible to travel from London to Basra in about six days. From Basra to Bombay the distance is just over 1900 miles—a distance which at say 20 knots could be accomplished in about 84 hours. Thus taking all the conditions at their most favorable value and allowing only a margin of five hours in Basra, travelers and mail could be conveyed from London to Bombay by that route in just under ten days instead of as before the war in between 13 and 14 days. But against these advantages must be set the facts that the journey by way of Brindisi and the Suez Canal could be speeded up and that on the great cross-country journey from Constantinople to the Gulf there would be bound to be considerable delays and irregularities in the running of the railroad trains.

#### Influence on Allied Military Plans

Mr. Woods went on to point out that knowledge of the coming improvements upon the Baghdad and Syrian Railways must have had a prominent influence upon the Allied

plan of operations. In November, 1914, when the Ottoman Government threw in its lot with the Central Powers there was a gap of 30 miles in the Taurus, the Amanus tunnels were not complete, the Jerabelus bridge across the Euphrates was not in position, and the terminus of the railway was at Tel-el-Abiad, only about 60 miles to the east of the river. This meant not only that the Turkish reinforcements and material destined for Mesopotamia had to be detrained at least twice, but that the enemy was unable to derive the full benefits provided by the Euphrates route for water transport. Under these circumstances it was obvious that it was necessary to forestall the Turks and to inaugurate a Mesopotamian campaign before the improvement and completion of the Baghdad Railway. Moreover, the fact that the enemy was compelled to utilize the finished parts of the line for military purposes prevented these sections from being available for the transportation of railway material to be utilized for the extension of the line. Equally in regard to the Syrian campaign, had the British delayed taking the proper precaution on the Egyptian frontier until the opening of the Taurus and Amanus tunnels and until the completion of the new railway on the west of the Jordan, the magnitude of their task and the dangers of the situation would have been enormously increased.

#### The Future Prospects

It is difficult, if not undesirable, to make a detailed forecast as to the future of the Baghdad Railway and of the other lines in Asiatic Turkey. The only alternative was, therefore, to say that two things seemed certain—firstly, sooner or later the Baghdad or some other line from the Bosphorus to the Persian Gulf would be completed—and secondly, its ownership and control would depend not so much upon any agreement already made as upon the results of the war and particularly upon the fate of Turkey. For years the Germans have turned their attention towards the development of an influence which, so to speak, pivoted upon the Baghdad Railway. It is for this reason that whatever concession might be offered to them nearer at home the Allies must leave no stone unturned to prevent the conclusion of a peace which will leave the enemy still possessed of the predominating control in an undertaking, which, once it were robbed of its political significance could easily be established upon an international basis and controlled as a result of some scheme of internationalization.

TRANSPORTING TROOPS TO THE ITALIAN FRONT.—A British authority, Major Redway, has contributed to the London Globe some interesting calculations relative to the movement of troops by rail, with special reference to the Italian front. A British division up to war strength requires, he says, a total of 85 trains, made up as follows: Two specials for headquarters, 27 trains for three brigades, one for a cavalry squadron, 45 for artillery, two for engineers, two for the supply units, and six for field ambulances. Italian conditions may differ somewhat, but under normal conditions the average speed would be something under 20 miles an hour, and it would take at least 24 hours to unload a dozen battalions from one platform. As regards the Italian campaign, two Franco-Italian routes are available, the Marseilles-Nice-Genoa coast line, and that from Calais to Rome, via Modane. The enemy can bring troops from Bavaria only via the Adige Valley and Trieste to Verona, and from Vienna to Venice there is but one through line, via Udine, and the coastal line from Trieste to Venice, via Monfalcone. "With all the talk about the mechanism of war," no belligerent has found the strategical concentration of a modern army by rail, utilizing the ordinary resources of a passenger and freight line, anything but a sore tribulation, from the first marshalling of the rolling-stock to the detraining of the last S. A. A. cart.



# The New Haven Saves a Million Dollars in Fuel\*

## Marked Economies Are Effected by Supervision of Locomotives on the Road and at the Terminals

THE NEW YORK, NEW HAVEN & HARTFORD estimates a yearly fuel saving amounting to more than a million and a third dollars, based on comparison of actual performance of its locomotives in December, 1917, as against December, 1916.

### Care of Fires at Engine Terminals

The necessary use of locomotives on short runs to an unusual extent because of the characteristics of traffic on the New Haven causes a relatively large detention under steam at terminals, so that the proportion of coal consumed while the locomotives are standing is large. This feature of the problem being of prime importance, much attention has been given to it during the past six months with gratifying results. Fuel supervisors follow up the subject with those in charge of locomotives, and have established fairly stable values for coal burned per hour for the several classes of power when the fires are banked, when covering the full grate area, and when dumped and then rebuilt as needed.

Master mechanics are encouraged to prepare estimates of savings based on such unit consumption rates applied to locomotives held at terminals, versus what the consumption would have been had the locomotives been permitted to stand with the full grate area covered, as formerly.

Recent reports of master mechanics to the general fuel supervisor containing estimates of savings for one week follow:

Division	Pounds of coal saved
New York .....	36,352
New Haven .....	170,137
Highland .....	225,300
Hartford .....	40,460
Providence .....	82,026
Old Colony .....	246,588
New London .....	132,839
C. N. E. Ry. ....	149,653
Total .....	1,083,355 = 541.5 tons

It is endeavored to have the terminal forces bank the fires of locomotives which are not to be used within a short time. When locomotives are to be held three to four hours the grate area covered is reduced by 60 per cent. In the case of locomotives to be held 24 hours or more, the fires to be dumped.

The men at terminals have also been drilled as to the necessity of careful and economical handling of coal in the work of cleaning and banking the fires. Ashpit men are taught, so far as changing forces permit, to minimize the amount of coal placed in the firebox after the fire is cleaned and also to be particularly careful in cleaning the fires that good coal is not wasted. This has, undoubtedly, resulted in considerable saving.

### Education of Firemen

Frequent changes in the personnel of firemen in service make education much less complete than is desirable or possible in more stable times, but continued effort is made to instill into the engineers and firemen the seriousness of the coal shortage and the tremendous burden which the present high prices place on the road, and the entire nation. When the men are told of the current prices of coal to the company they usually express surprise, as, generally, they have not realized that the extraordinary prices of the present affect the railroad to the same extent as they are affected in their personal living expenses. Almost without exception the men agree to co-operate in fuel saving.

\*From a report by George W. Wilden, general manager of the New York, New Haven & Hartford, to the Bureau of Mines.

Attention has been called to what the saving of one shovel-ful of coal per mile amounts to; figures have been compiled for the year ending June 30, 1917, as to just what was done and what could have been done if one scoopful of coal per mile was saved. This starts the men thinking and shows them what they can do if they practice rigid economy in the use of fuel. Good results are being produced, as is shown in current reports.

### Regulation of Nozzle Sizes

It is desirable to standardize, as far as practicable, the sizes of exhaust nozzles, using, of course, the largest sizes consistent with free steaming. Variations in the quality of coal available make this no simple matter, but constant supervision is productive of better results than permitting the matter to drift along lines of least resistance. Fuel supervisors render good service in this respect by constant checking of locomotives, and co-operation with engine house forces.

A concrete example of the benefits was the trial of switching power with larger nozzles than formerly, the result indicating roughly that there was a reduction of coal used amounting to 128 lb. per hour. That would mean over 50,000 tons per year on the New Haven.

Constant effort to strengthen the interest and co-operation of engine and terminal men to assist, and to feel themselves partners in the work, is made, largely through the use of such figures as mentioned above.

### Individual Performance Data

Of prime importance is the use of figures for individual road locomotives, showing consumption of coal in *pounds per 1,000 gross ton miles*, both in passenger and freight service. This data is prepared by an accounting force and the records of the various locomotives are examined and memoranda made covering cases of locomotives whose consumption is running out of line with good practice, class of power and service being considered. Fuel supervisors then ride the locomotives and make reports of defective boilers, machinery, draft rigging, grates, plugged flues, etc., to the master mechanics. Also, if necessary, the crews are instructed in proper handling methods; or the terminal may be checked with regard to coal used during lay-overs.

### Superheating Smaller Power

Modernizing older locomotives by applying new valve gear and superheaters results in a saving on the New Haven, of over 20 per cent in the coal used per 1,000 gross ton miles. Superheating is absolutely necessary in order to obtain the lowest unit coal consumption and the greatest power output from the locomotive.

### Miscellaneous Coal Losses

The supervision of fuel naturally checking losses by overloading tenders; by waste around coaling stations; by failure to remove all coal from coal cars; by theft; by loss through holes in the decks of locomotives, etc.

Fuel supervisors report the need for picking up coal dropped along the right of way so that it can be utilized at section houses and for station needs, and for switch shanties, etc.

### Train Operation

The general fuel supervisor brings to the notice of the higher operating officers cases of misuse of power, resulting in fuel waste; as, for example, unnecessary double-heading,

light mileage, excessively large locomotives on small trains, etc.

Superintendents endeavor to lessen the delay in transit of all trains, and particularly heavy freight trains. Attention is given to the fact that the stopping of freight trains entails a serious loss of fuel from which no returns are had, and care is exercised by despatchers to avoid, if possible, the stopping of trains at the foot of steep grades, from which points it is difficult and expensive to start.

#### Proper Engine Loading

Proper loading of trains with respect to locomotive capacity is of the greatest importance in obtaining a low unit consumption. An overloaded locomotive is wasteful of fuel. An underloaded locomotive is equally so, measured in "gross ton miles per unit of coal used." A locomotive with two-thirds its rating will burn nearly as much coal per train mile as it will with full rating, and the ton-mile cost is correspondingly high.

It is particularly important to have locomotives properly loaded to get the greatest benefit from superheaters. A corps of fuel supervisors cannot gain headway on a gross-ton-mile-consumption basis against any considerable decrease in the loading of engines.

#### Saving from Fuel Supervision

In a word, the saving of fuel has the constant attention of practically all employees in the operating department, beginning with the superintendents and ending with the men who clean the fires on the ashpit. Their attention is constantly directed to the savings produced by careful thought and action and to the losses resulting from inattention and neglect.

The foregoing gives information as to the principal methods followed on the New Haven to conserve locomotive fuel. In order to determine the net results on a broader scale than by such estimates as have gone before, figures from actual operation of all locomotives in freight and passenger service, both yard and road, are appended to show that the varied efforts have produced a considerable reduction in coal consumption, and consequent large money saving.

Comparison is made between the performance in September of 1917 and 1916; the results of which are typical of those for broader periods. The statistics of coal used are those covering all issues to locomotives as charged under the primary accounts, Interstate Commerce Commission classification.

	ROAD FREIGHT STEAM LOCOMOTIVE SERVICE		
	Pounds of coal per 1,000 G. T. M.	Pounds of coal per engine mile.	G. T. M. per engine mile
September, 1916	227.44	166.76	796
September, 1917	199.74	163.24	945
	27.70—11.9 per cent (Decrease)	3.52—1.8 per cent (Decrease)	149—18.7 per cent (Increase)

There were 632,287,097 gross ton miles handled in September, 1917, which, if the 1916 consumption rate had prevailed per 1,000 G. T. M., would have required 8,757 more tons of coal than were actually burned. Since the cost of coal on tenders averaged \$5.09 per ton, the saving was \$44,573 for the month, or at rate of \$534,876 per year.

It is gratifying to note that with an increase of 149 gross ton-miles per locomotive mile, or 18.7 per cent, there was a decrease of 3.5 lb. of coal per locomotive mile, or 1.8 per cent. Greater locomotive loading naturally has benefited the gross ton-mile consumption, but the coal used per locomotive mile would have also increased if the supervision had not been effective.

	FREIGHT YARD LOCOMOTIVES	
	Pounds of coal per car received	Pounds of coal per engine mile
September, 1916	111.19	116.25
September, 1917	99.31	97.78
	11.88—9.9 per cent (Decrease)	18.47—15.5 per cent (Decrease)

There were 383,413 freight switch locomotive miles in September, 1917. Therefore, the coal saved on a locomotive mile basis was 3,540.5 tons for the month. At the rate of \$5.09 per ton, the saving was \$18,021 during the month, or at rate of \$216,252 per year.

	ROAD PASSENGER STEAM LOCOMOTIVE SERVICE	
	Pounds of coal per 1,000 G. T. M.	Pounds of coal per engine mile
September, 1916	426.68	111.16
September, 1917	364.65	109.07
	62.03—14.5 per cent (Decrease)	2.09—1.8 per cent (Decrease)
		38—14.5 per cent (Increase)

There were 313,713,362 gross ton-miles handled in September, 1917, which, if the 1916 consumption rate had prevailed this year per 1,000 gross ton-miles, would have required 9,729.5 more tons of coal than were actually burned. Since the cost of coal on tenders averaged \$5.09 per ton, the saving was \$49,523 for the month, or \$594,276 at the yearly rate.

It is gratifying to note that with an increase of 38 gross ton-miles per locomotive mile, or 14.5 per cent, there was a decrease of 2 lb. of coal per locomotive mile, or 1.8 per cent.

	PASSENGER YARD LOCOMOTIVES
	Pounds of coal per locomotive mile
September, 1916	112.09
September, 1917	95.17
Decrease	16.92—15.1 per cent

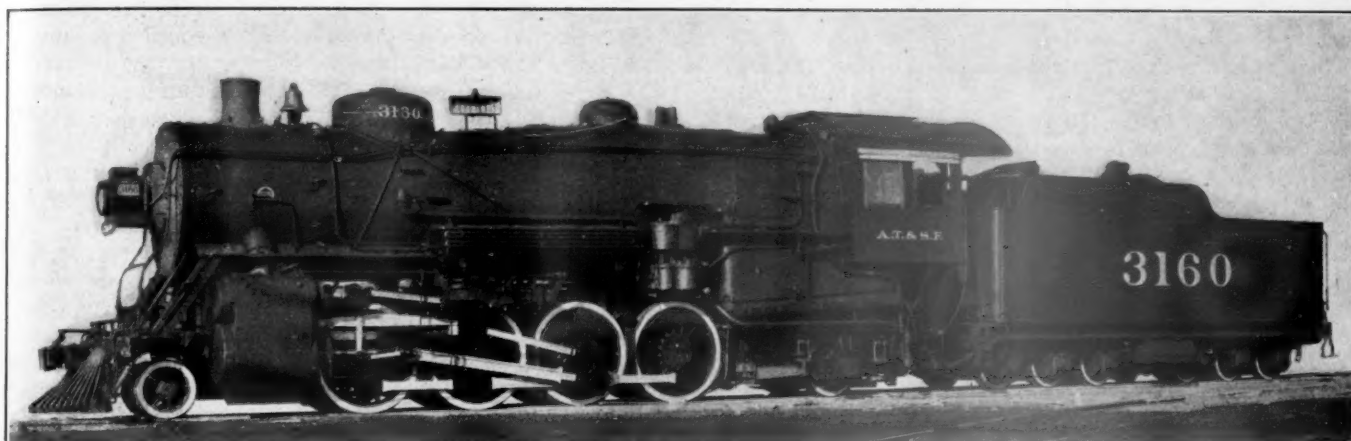
There were 65,568 passenger switch miles in September, 1917. Therefore, the coal saved on a locomotive mile basis was 554.5 tons. At the rate of \$5.09 per ton, the saving was \$2,822 during the month, or at an annual rate of \$33,864.

#### SUMMARY OF ESTIMATED FUEL SAVINGS BASED ON COMPARISON OF ACTUAL PERFORMANCE SEPTEMBER, 1917, VERSUS SEPTEMBER, 1916

	Per month	Per year
Passenger service:		
Road	\$49,523	\$594,276
Yard	2,822	33,864
Total	\$52,345	\$628,140
Freight service:		
Road	\$44,573	\$534,876
Yard	18,021	216,252
Total	\$62,594	\$751,128
Recapitulation		
Savings in passenger service	\$52,345	\$628,140
Savings in freight service	62,594	751,128
Grand total savings	\$114,939	\$1,379,268

OBSERVING MILITARY TRAFFIC FROM THE AIR.—Hardly a train moves within five miles back of the German trenches, or a squadron of men come up for relief, or digging begins on a new series of emplacements but a pair of keen eyes, steadily watching from great observation balloons just behind the Allied front takes notice of it, says a letter from a captain in the U. S. Aviation Corps to the St. Louis Republic. Every movement, every activity, is registered until a schedule of the usual enemy routine is built up and the average amount of motion known. Any departure from this schedule is suspicious. A train running late or with more cars than usual, men in the trenches being relieved too frequently, new roads or emplacements being built too earnestly, give the first hint that "Fritz," across the line, is up to something. A keen balloonist notes any of these changes and at once telephones down to the ground, "An extra train of six cars passed — at 10:40." Half a mile farther down the line another pair of eyes reports, "Large convoy moving up to front, range so-and-so." Still a little farther down another suspicious circumstance is noted, until the general staff down below, assembling all these straws, foresees the beginning of a big offensive across the line. Counter measures are taken, batteries directed, convoys and trenches are smashed up, and the enemy's plans thrown askew.





## Mikado Type Locomotive for the Santa Fe System

Developed from Earlier Class of Same Type; Greater  
Horsepower Capacity, No Change in Adhesion

THE SANTA FE SYSTEM is now receiving from the Baldwin Locomotive Works a consignment of heavy Mikado type of locomotives, which are intended for freight service on the Eastern Lines. These engines are coal burners and were developed from lighter Mikado type locomotives built in 1916. The new design was worked out conjointly by the railway company and the builders, and existing Santa Fe standards were used generally throughout the construction. A comparison of the leading dimensions of the new locomotives with those of the previous engines is as follows:

Date built	Cylinders, dia. and stroke, in.	Diameter drivers, in.	Steam pressure, lb.	Grate area, sq. ft.	Water heating surface, sq. ft.	Superheating surface, sq. ft.	Weight on drivers, lb.	Weight, total engine, lb.	effort, lb.	Tractive
1916.....	25 by 32	57	200	58.5	4,111	880	228,000	292,400	59,600	
1917.....	27 by 32	63	190	66.8	4,614	1,086	228,900	314,900	59,800	

Wheel load limitations prohibited a material increase in the weight on drivers, as compared with the design of 1916; and while the new engines are heavier, the additional weight is carried on the front and rear trucks. The principal advantage derived from this greater weight is the increased steaming capacity of the enlarged boiler. With this additional steam supply the larger cylinder horse-power incident to the use of driving-wheels of greater diameter can be developed. For an increase in total weight of not quite eight per cent there has been an increase in water heating surface of over 11 per cent. The starting tractive efforts, with steam pressures giving approximately the same ratio of adhesion, are practically the same for both locomotives, but the larger cylinders, wheels and boilers of the new engines give them greater horse-power capacity. This additional power will be utilized in maintaining higher speed with the same or possibly a little greater tonnage.

The boiler is of the extended wagon-top type, designed for a pressure of 225 lb. per sq. in., but in service carrying 190 lb. It contains a 43-element superheater, and the firebox is equipped with a brick arch supported on four tubes. An auxiliary dome, mounted over an opening in the shell of sufficient size for inspection purposes, is placed back of the main dome and on the same course with it. A single liner is placed under both domes; it also covers the longitudinal

seam, which is placed on the right hand side of the center line.

The boiler accessories include a power-operated fire-door and grate shaker. The minimum air opening specified for the ash-pan is 15 per cent of the grate area. The throttle valve is fitted with an auxiliary drifting valve.

The cylinders are designed with direct exhaust passages of ample area, free from abrupt bends. Gun iron is used for the cylinder and steam chest bushings, piston and valve bull and packing rings, and crosshead shoes. The piston heads are of rolled steel, and the crosshead bodies of .40 carbon cast steel of the Laird design. Special steels are used for the piston rods, valve stems, main and side rods and main crank pins. The Baker valve motion is applied, and is controlled by the type "B" Ragonnet power reverse gear. Fifty per cent of the weight of the reciprocating parts is balanced.

The frames are of substantial design, the main sections having a width of 5½ in., while the depth over the front driving pedestals is 8½ in., and over the remaining pedestals 7½ in. The top and bottom rails are tied together between adjacent pairs of pedestals, by strong vertical ribs of I-section. These ribs carry the equalizing beam fulcrum pins, which are fitted into case-hardened bushings. Transverse braces are applied at each pair of driving pedestals. Three of these braces—two at the second pair of pedestals and one at the fourth pair—not only brace the pedestals through their entire depth, but are also extended to form long braces for the top rails. They support, respectively, the guide yoke, the valve motion bearer, and a boiler waist sheet.

The shoes and wedges are of cast steel, and the driving boxes are of the same material, with brass hub faces. Long main driving boxes are used. The tires are all flanged, and flange oilers are applied to the leading drivers.

The leading truck is of the Economy constant resistance type, and the trailing truck is of the Hodges type. Each truck is equalized with two pairs of driving-wheels. The arrangement of cross equalization frequently applied by the builders, consisting of two transverse beams connected by a central, vertical link, is used between the rear drivers and trailing truck.

The cab is placed well back, thus providing ample deck space. Special attention has been paid to the location of the cab fittings, in order to place all levers, valves, etc., with-





in easy reach of the crew, and to locate the steam, air and water gages where they can easily be read.

The tender is carried on two six-wheeled trucks, which are equipped with clasp brakes and Standard rolled steel wheels. The tender frame is of cast steel, in one piece.

The buffer between the engine and tender is of the radial type. A coal pusher is applied.

These locomotives, in accordance with Santa Fe practice, are fitted with steam heat equipment so that they can, in cases of emergency, be used on passenger trains. Their leading dimensions are given in the table:

General Data	
Gage	4 ft. 8½ in.
Service	Freight
Fuel	Bit. coal
Tractive effort	59,800 lb.
Weight in working order	314,900 lb.
Weight on drivers	228,900 lb.
Weight on leading truck	31,000 lb.
Weight on trailing truck	55,000 lb.
Weight of engine and tender in working order	563,900 lb.
Wheel base, driving	16 ft. 6 in.
Wheel base, total	35 ft. 1 in.
Wheel base, engine and tender	71 ft. 8½ in.
Ratios	
Weight on drivers ÷ tractive effort	3.8
Total weight ÷ tractive effort	5.3
Tractive effort × diam. drivers ÷ equiv. heating surface*	603.4
Equivalent heating surface* ÷ grate area	93.5
Firebox heating surface ÷ equiv. heating surface* per cent	4.3
Weight on drivers ÷ equivalent heating surface*	36.7
Total weight ÷ equivalent heating surface*	50.4
Volume both cylinders	21.2 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	291.7
Grate area ÷ vol. cylinders	3.2

Cylinders	
Kind	Simple
Diameter and stroke	27 in. by 32 in.
Valves	
Kind	Piston
Diameter	15 in.
Wheels	
Driving, diameter over tires	63 in.
Driving, thickness of tires	3½ in.
Driving journals, main, diameter and length	12 in. by 20 in.
Driving journals, others, diameter and length	11 in. by 12 in.
Engine truck wheels, diameter	31½ in.
Engine truck, journals	7 in. by 12 in.
Trailing truck wheels, diameter	40 in.
Trailing truck, journals	9 in. by 14 in.
Boiler	
Style	Wagon top
Working pressure	190 lb. per sq. in.
Outside diameter of first ring	82 in.
Firebox, length and width	114 in. by 84½ in.
Firebox plates, thickness	Tube, ½ in.; others, ¾ in.
Firebox, water space	Front, 6 in.; sides, 5 in.; back, 4½ in.
Flues, number and outside diameter	252—2½ in.
Tubes, number and outside diameter	43—5½ in.
Tubes and flues, length	20 ft. 9 in.
Heating surface, tubes and flues	4,348 sq. ft.
Heating surface, firebox, including arch tubes	266 sq. in.
Heating surface, total	4,614 sq. ft.
Superheater heating surface	1,086 sq. ft.
Equivalent heating surface*	6,243 sq. ft.
Grate area	66.8 sq. ft.
Tender	
Tank	Water bottom
Frame	Cast steel
Weight	249,000 lb.
Wheels, diameter	33 in.
Journals, diameter and length	5½ in. by 10 in.
Water capacity	12,000 gal.
Coal capacity	16 tons

\*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

## Senate and House Committee Railroad Hearings

### Necessity for Stabilizing Credit. Controversy Over Short Lines. Cummins Asks Salary List

W. G. McADOO, director general of railroads, testified on Saturday before the Senate committee on Interstate Commerce which is considering the administration bill for federal control of railroads. He did not discuss at length the details of the bill, which had been dealt with exhaustively by Commissioner Anderson, but confined his testimony principally to answering questions by members of the committee. Before he had concluded he was asked by Senator Cummins to furnish a list of all directors, presidents, vice-presidents, general managers, secretaries, treasurers and counsel of the railroads under government control, with their salaries. He promised to do so as soon as it could be compiled.

Mr. McAdoo urged the early passage of the bill, saying it would be a great advantage to have the question settled promptly because both the railroads and the government have to face the question of what improvements and additions to equipment are to be made this year and no expenditures can be made until the appropriation is available.

#### Purpose of the Appropriation

The appropriation of \$500,000,000 proposed is "about the smallest amount that the government could get along with," he said. It may be necessary to meet any deficiency in earnings to pay the guarantees, and while he hoped it will not be necessary to make good any deficiency he could offer only a hope and an expectation based on general knowledge and what some railroad officers have told him that some economies will be possible. On the other hand, he said, any economies resulting from unification may be offset by increases in wages and in other items of expense that cannot be avoided.

A fund is also necessary for equipment and additions and

improvements and some roads may need assistance in financing. He thought that the companies themselves, once their status is settled, can take care of refunding their maturing obligations, which, according to a statement he had prepared, would amount to \$222,000,000 in 1918, \$228,000,000 in 1919, and \$215,000,000 in 1920. These figures include equipment obligations. It may be necessary to give some financial assistance to roads now in receivers' hands.

In reply to a question, Mr. McAdoo said he thought the basis of compensation proposed in the bill is on the whole a fair one and he thought it wise to arrive at a fair basis which would be generally accepted as such in order that a settlement could be promptly made.

The necessity of stabilizing market conditions, which had been undermined to an extent that seriously threatened the financial structure of the country by the shrinkage of railroad securities, was one of the impelling reasons for the assumption of government control of the railroads, Mr. McAdoo said.

#### The Serious Condition of Railroad Credit

"Why was federal control necessary?" asked Senator Poin-dexter.

"I think that was covered in the President's statement," replied Mr. McAdoo. "It was obvious that under the competitive system it was impossible to get the co-ordination which was necessary to the efficient conduct of the war, but it was also necessary to settle a serious situation which was affecting the whole basis of credit and we attempted to settle both problems at once. There were something over \$11,000,000,000 worth of railroad bonds outstanding which were held not only by individuals but by banks and fiduciary institutions, and which formed an essential part of the credit struc-

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ture of the country. The values of these securities had shrunk very much under the uncertainties of the situation and the railroads were experiencing great difficulty in selling new securities to finance the new equipment and facilities needed to meet the unusual demands upon them. Something had to be done to stabilize the railroad financial condition. The shrinkage in the value of the assets of savings banks and other institutions and in the credit power of firms and individuals, was threatening a very serious situation."

Senator Smith asked whether the difficulty in the transportation situation was due to lack of facilities or to the failure to secure their full use.

"It was due to both," replied Mr. McAdoo. "Every railroad man naturally felt an obligation to the owners of the property to get all the business he could for his road. That was his duty, but when some took more than they could carry congestion resulted. When I took charge I found a terrible congestion on the eastern lines caused not only by insufficient facilities of all kinds but particularly by the shortage of motive power and the fact that a large percentage of the freight cars were being used for warehouses. The equipment might have been sufficient if it had been possible to get the full use of it. We hope to be able to remedy that by the higher demurrage rates." He also said that it was hoped that the situation would be improved by the order to the locomotive builders to deliver all locomotives turned out during January, February and March, to the eastern roads. That could not have been done under private management, he said.

In reply to Senator Poindexter as to what other things he had been able to accomplish, Mr. McAdoo said a great deal had been done in diverting cars from the overloaded lines by distributing the traffic via the lines that can handle it the best regardless of the shippers' orders.

#### Little Improvement Yet

"Has there been any clearing up in the situation?" he was asked.

"Through the East I don't think there has been much improvement," Mr. McAdoo replied. "The railroad men were left on the job and in addition were given the benefit of the power of the federal government, but there was a serious congestion when the government took hold, and while I do not believe in excuses the railroad men tell me that the weather has been unprecedented. Blizzards have come so fast that it was impossible to dig out of one before another came."

In discussing the causes for the congestion Mr. McAdoo said that no one condition could be singled out but that one of the most serious causes was that consignees have held cars for an unreasonable length of time because it was easier to pay demurrage than to unload them. Other causes were the shortage of power and the scarcity of labor to repair locomotives. He thought that in a short time, with the aid of the government, it would be possible to get more efficient operation.

"Government control didn't have any effect on the weather," remarked Senator Poindexter.

#### Causes of Congestion

Mr. McAdoo also referred to the undue congestion of export traffic at New York which should have been distributed to other ports. He said the railroads were not wholly to blame for this situation because they did not control the shipping but he thought lines terminating at New York had preferred to take freight to that port and that under government control it would be possible to distribute it more equitably.

"Had not the Railroads' War Board taken steps to do so?" asked Senator Watson.

Mr. McAdoo said it may have done so; that he was familiar only in a general way with what it had done but

he thought that while it had done good work it had tried to accomplish by agreement some things the government could order.

Senator Kellogg asked if the principal reason for the congestion was not the enormous increase in traffic and the inability of the railroads to secure additional cars and locomotives because of the prior demands of the government for materials and for cars and engines for France and Russia. He also asked if the War Board had not been able to draft 100 locomotives from western roads without the assistance of the government and if the railroads had not been hampered by letters from the attorney general warning them not to violate the laws.

Mr. McAdoo said he had only a general knowledge of these things.

"But how has government control benefited the situation?" asked Senator Kellogg.

"I haven't said it has benefited it yet," replied the director general.

He said that the statistics show that during the last two or three years the railroads had expended for new equipment much less than in former years and while he was not prepared to say just why this was so it might have been because the railroads had found themselves confronted with the great increase in cost and hesitated to buy as much as they should. "However," he said, "the fact that they did not makes it very obvious that when the enormous increase in traffic came, they found themselves in a very awkward situation."

Senator Cummins asked whether the present organizations, officers and employees of the railroads will be retained.

"As long as they prove satisfactory and efficient, and I hope they will," said Mr. McAdoo.

#### Officers' Salaries

"What provision ought to be made with regard to the compensation of officers and high-priced employees? What are you going to do with these big salaries that are charged to operating expenses?"

"I haven't had time to give any study to that question," replied Mr. McAdoo. "We are not going to carry any one in the government account that is not necessary but it is necessary that the integrity of the railroad organizations be preserved until the railroads are restored to their owners or at least until Congress determines what shall be their status, and we must pay whatever it costs to get the right kind of talent. The railroads ought to keep up their organizations to the extent that they are serviceable and efficient." He added that the government would not be assuming directly the expense of railroad salaries because they are already charged to operating expenses. The corporations are operating the railroads for government account, and he had not assumed that their employees were government employees.

Senator Cummins then asked for the list of officers and their salaries which Mr. McAdoo promised to furnish as soon as possible.

Mr. McAdoo also conferred with the committee in executive session.

#### Not in Favor of Government Ownership

Mr. McAdoo continued his testimony before the Senate committee on Monday, laying special emphasis on the importance of an early passage of the bill and upon the necessity of allowing for a period of readjustment after the war without fixing any time limit for the return of the roads to their owners. In reply to a question by Senator Watson Mr. McAdoo said that personally he was not in favor of government ownership of railroads, but he thought it would be impossible to return to the same status that existed before the war, because fundamental conditions will have been so altered, if the period of government control is a long one,



that new legislation will be required to fix the new status and Congress should have a free hand in dealing with the new conditions. The entire method of routing traffic will have changed, he said, and a sudden taking away of the government control would leave both traffic conditions and the position of the security owners in a chaotic condition. Moreover, he said, the expiration of the period might come during a recess of Congress or a filibuster might prevent action within the time limit.

If the plan of government control proves beneficial, Mr. McAdoo said, the people will not be satisfied to go back to the competitive system, and a larger measure of government control than has prevailed would be the result. He suggested the possibility of a plan somewhat along the lines of the present plan, by which the government would not actually take title to the roads but which would free them from the complications resulting from the conflicting jurisdictions of 48 states and the federal government.

"We are dealing with absolutely uncertain conditions," he said, "and if the control should last for three years conditions will be more changed than if it lasted only six months. The longer it lasts the greater will be the government's investment in these properties; if it should last three years the investment might be \$1,500,000,000, and time would be required to effect the liquidation. It is in the interest of the security owners to have the status preserved until intelligent action is taken to settle what it shall be. My view is that it is wiser for Congress to keep this under control, so that it may be free to deal with conditions as they exist at the end of the war."

Senator Kellogg asked if he thought it wise to give the President absolute power over rate-making.

"I think it would be extremely unwise to hamper him in any way," replied Director McAdoo, who explained that there was no purpose to interfere with the exercise of the power of the interstate or the state commissions in ordinary matters, but that it was considered essential that the President should have paramount power to act when the public interest requires it without consulting all the various commissions. He cited as examples his action in ordering coal shipped through the Pennsylvania tunnels to save the people of Long Island from freezing, although it was contrary to a franchise provision, and also his action in prescribing new demurrage rates and rules. It would have been impossible to take prompt action, he said, if he had had to apply for permission to every state commission and some legislatures that had prescribed demurrage rates by statute. The President has a great many powers he does not exercise, Mr. McAdoo said, and while ordinary procedure will continue to be observed in ordinary cases it is necessary for him to have power over rates to prevent the possible action of a state to reduce the revenues on which the government depends to meet its guarantees.

"That means that until Congress sees fit to order otherwise one man is going to fix all the rates and their relations," said Senator Kellogg.

"It does not mean that," replied Mr. McAdoo. "It merely means that he has the power to act when it is necessary for the purposes of the war."

If Congress shall fail to legislate to terminate the period of government control, Mr. McAdoo said, the courts could be appealed to to terminate it. If there is any fear of government ownership in the desire to fix a definite time limit, he said, Congress cannot prevent the consideration of that question hereafter by anything it may do now. "Why should we allow the specter of government ownership to influence action that it is wise to take now?" he asked. "The reason we haven't ships now is the fact that Congress in 1914 refused to pass the shipping bill for fear of government ownership, and now we are again confronted with the same specter if we try to do something that is needed to be done."

Senator La Follette protested against the use of the word "specter." "It is a reality," he said, "and we will have to meet it some time anyway."

"It has no terrors for me," remarked Senator Cummins.

Mr. McAdoo said he thought the proposed basis of compensation is eminently fair and reasonable, and that a basis that will be accepted as such will aid the government incalculably in carrying on its own financial operations. When a member of the committee pointed out that the roads which would receive a liberal guarantee would probably make an agreement with the government while the roads whose earnings in the three-year period had been low would sue for more, Mr. McAdoo replied: "Well, what is the remedy for that? We cannot be less than fair to any one. The government cannot stand for doing a deliberate injustice to anyone. We can only establish a fair principle as the basis of a settlement." He added that the amount of the guarantee to be paid by the government might be more than the estimates for this reason.

Senator Cummins was more worried about the danger that the President should continue to exercise absolute power over the transportation system after the war than he was about the effect of a sudden removal of the guarantee upon security owners, and asked if Congress should not provide against the possibility of leaving the entire transportation system of the country in the hands of one man.

"I am inclined to feel that the people have more confidence in the President than in anyone else," replied Mr. McAdoo, "and as an American citizen I would be more confident with the railroads in the hands of the President, no matter who he might be, than in the hands of any board or commission. I think he would handle them better and with greater responsibility to the people."

The step taken by the President was necessary, Mr. McAdoo said, not only to secure the necessary co-ordination of transportation facilities but to give the necessary stability to financial conditions, and that this purpose would not be accomplished unless the basis of compensation is made such as to give assurance of fair treatment to the railroad security owners.

#### Permanent Acquisition Not Intended

"This step was was not intended to be a permanent acquisition of the railroads," he said. "The government acted to meet an emergency and the compensation should be on an emergency basis. It cannot be put on the same basis as if the assumption of control were to be permanent. The proposed guarantee is about \$100,000,000 less than the income of 1917, and it will be reduced still further by the deduction of war taxes. If that is not a fair trade for the government I don't know what would be fair."

Discussing the order of the Fuel Administration curtailing the use of coal, Mr. McAdoo said that, "assuming a reasonable quality of weather," he hoped that conditions would soon improve to such an extent that the order would not have to go as far as is now contemplated, and that "an immense improvement" has resulted already.

#### Attitude of Congress

Although President Wilson has made several efforts to urge Congress to expedite its consideration of the railroad federal control legislation, no prospects for early action are yet apparent and no one so far is venturing even an opinion as to when the bills will get out of the committees that have been holding almost continuous hearings for over two weeks.

Commissioner Anderson, the author of the administration bill, which has already come to be known as the "Anderson bill," instead of by the names of the congressmen that introduced it, has already proposed redrafts of several sections and there is such a divergence of views among members of

the committees as to various provisions of the bill that a considerable length of time will be taken in agreeing upon the reports. After the bill gets on to the floor of Congress a protracted debate is likely to ensue.

The most sharply defined issue is presented by Section 13 of the bill, which is being bitterly contested by those who, rightly or not, see in it a "joker" for the purpose of keeping the roads in the possession of the government, including a large number of Republicans and also some Democrats who do not believe in government ownership. Another point of controversy has been aroused by the announcement that Mr. McAdoo does not propose to conduct an eleemosynary institution for orphan railroads and will relinquish control of any of the short lines that he does not consider essential. A great many congressmen who are very little concerned about the things that worry the officers and owners of the big railroads are showing not only sympathy for the little roads but are interesting themselves in their local institutions.

Very little opposition is heard to the general plan of the bill for compensating the railroad owners for the use of their property, although some of the radicals and those who are constitutionally anti-railroad will object to it as being too liberal. On the other hand, the ranks of those who may be considered friendly to the railroads—and these are more numerous than they were two or three years ago—are likely to be considerably augmented by those who regard the action of the government in taking over the roads as absolutely unnecessary and unwarranted. The situation was not made more harmonious by the drastic order of the Fuel Administration, which many Republicans chose to interpret as an indirect method adopted for easing the strain on the Democratic railroad administration. One representative called the order "nothing more than a camouflage for the real railroad situation."

The hearings before the Senate committee were continued throughout all of last week. After the representatives of the short line roads had been heard Luther M. Walter, a traffic attorney representing numerous shippers, but who appeared at the request of the committee, suggested some changes in the bill. He was particularly desirous of protecting the powers of the Interstate Commerce Commission and of the station commissions in rate-making and he urged that the three-year average net operating income be based on the period ending December 31, instead of that ending June 30, 1917. He asked that the act to regulate commerce be not interfered with except as to the right of the shipper to route his freight and he thought the shipper should be allowed to designate the delivering carrier. He also urged that a representative of the shippers should be included in the staff of the director-general. The period of government control should terminate 30 or 60 days after the war. In the case of new roads or roads whose traffic has recently been greatly increased, he said, provision should be made for a guarantee representing a reasonable earning capacity.

Joseph L. Bristow, chairman of the Kansas Public Utilities Commission and of the legislative committee of the National Association of Railway Commissioners, began his testimony by asking whether the standard rate of return was meant to be a percentage rate and if so whether it was to be computed on the book value or the capitalization. He was promptly assured by Mr. Anderson that the return was to be a sum of money without reference to any value. Mr. Anderson, to avoid any possibility of confusion, offered to strike out the words "annual rate," but Alfred P. Thom, counsel for the Railway Executives' Advisory Committee, said that that would give the roads only one year's net income for the entire period of federal control. He also said that at the proper time the railroads would ask that provision be made for payment of the guarantee at certain periods, perhaps quarterly, in order that they might meet their obligations. Mr. Bristow and Mr. Walter both asked that the guarantee

of adequate maintenance and depreciation should be made more specific. Mr. Bristow said it would be difficult to define the exact condition of the roads at the time they were taken over and at the time they were restored—"if they ever are restored"—and he feared that there might be many claims for inadequate maintenance.

Mr. Bristow said that, stating the proposed guarantee in terms of the percentage, of the book value made it look smaller than it really was, and he proposed that a definite rate of return based on the market value of the securities, or that the actual dividends be guaranteed. He based his attack on the book value on some of the results obtained in the tentative valuations made by the Bureau of Valuation, but when one of the senators suggested calling Director Prouty to testify, Commissioner Anderson said he had asked him, and that the director said he had as yet no information that would be worth anything as a basis for the compensation of the roads. Chairman Smith said Mr. Prouty had told him the same thing.

Mr. Bristow objected to the proposed guarantee on the ground that it would give some roads 25 per cent on their common stock and bankrupt others. He read a list of 25 roads with the percentages which the three-year average net operating income would represent in the common stock, but Commissioner Anderson said he had omitted to deduct for war taxes, and that if the committee thought the figures material he would like to have them checked by the commission's statistical department.

Senator Kellogg pointed out that under the bill the owners of the stock could not collect their large percentages anyway, because dividends are limited, and Senator Underwood pointed out that the government is confronted by a condition, not a theory, in that it has taken the roads and must pay a fair compensation no matter how painful it may be to do so because the railroads will hardly accept less than they can get from the courts.

### The Short Line Railroads

One of the most complicated phases of the problem created by the taking over of the railroads is that affecting the status of the short line railroads, many of which had earned an inadequate return or a deficit in place of a net operating income during the three years ending June 30, 1917, but many of which are now handling a considerable traffic and most of which had very high hopes for the immediate future. But Bird M. Robinson, president of the American Short Line Railroad Association, had not completed his argument for a provision in the bill to give special consideration to their peculiar conditions when John Barton Payne, Mr. McAdoo's legal advisor, announced that there was no intention on the part of the government of taking over a large number of the short roads which had been unprofitable and which were not considered essential and that, therefore, they need not worry about their guarantee.

This announcement fell like a bomb-shell among the representatives of the short lines, who showed copies of the notices received from the director general that they had been taken over, and of the various requests for information sent out by the Interstate Commerce Commission. It also produced some surprise among members of the Senate and House committees. The representatives of the short lines said that while they would be forced into bankruptcy if they were taken over without an adequate guarantee they would be "assassinated" if left out of the government system. Mr. Payne could not say what roads would be left out but he said that Mr. McAdoo does not think that the proclamation by the President or the notices sent to all railroads in the country constitute taking over all the lines and that he does not think the railroads not necessary for war purposes should be taken.

"The smaller roads cannot live if this interpretation is



final," said Mr. Robinson. "They will get no freight or cars from the larger lines and in addition will be forced to pay the higher wage scale which the government will allow."

"You might as well try to run a rural free delivery route in opposition to the government as to try to run one of these roads in opposition to the government system," said B. B. Dean, of the Gainesville & Northwestern, testifying before the Senate committee. "If the government is going to take any it should take all."

Most of the testimony on behalf of the short lines was in regard to the necessity of providing for a guarantee, in the discretion of the President or of some board, of a return commensurate with the present earning capacity of the road. The three-year average, it was said, would not pay the bond interest on many roads which are now able to pay their interest, particularly in the case of roads which have recently built new lines, or which have recently been reorganized. "You wouldn't fix the rental of a lot which had been vacant on the basis of what it had earned from a peanut stand on it," said Mr. Dean. He thought the "Anderson bill" would be a good bill with a few amendments. Commissioner Anderson said he would not object to a provision giving the President discretion to agree on a basis which would cover interest charges, on valid outstanding obligations and proposed a re-draft of section 3 which appeared satisfactory to the representatives of the short lines. This provides that all claims not adjusted shall be submitted to boards of referees appointed by the Interstate Commerce Commission. Mr. Anderson said that section 7 of the bill provides for any necessary financing of a road taken over by advances from the government.

A telegram was received by the Senate committee from the Western Association of Short Line Railroads protesting against any arbitrary basis of compensation. The committee decided that the association might file a brief.

Commissioner Woolley and Mr. Payne are understood to be compiling a list of the railroads and information on which to base a decision as to which lines shall be taken over. The decision will be based on the usefulness of the roads to the government.

Mr. McAdoo was questioned at length by the Senate committee regarding his attitude toward the short line railroads, which he said would not be taken over unless upon investigation they are found to be useful and necessary to the national purpose. "They are hollering before they are hit," he said in reference to their claim that they would be injured if left out of the government system, "and if they are damaged in any way which imposes a liability on the government they have a remedy in the courts." He said that traffic would not be diverted from them except as a war necessity and that there would be no disposition to treat them unfairly. Any non-essential railroad that has been taken over may be relinquished, he said, and a road found useful could be taken at any time, just as canals and other inland waterways could be taken over if desired.

Before the House Committee on Interstate and Foreign Commerce on Saturday, A. De Bernardi, general manager of the Kansas City, Mexico & Orient, said his road had not earned expenses for three years and thought it ought to be guaranteed operating expenses and enough to pay interest charges.

Clifford Thorne, representing several organizations of shippers, urged the incorporation of a specific provision to prevent the Interstate Commerce Commission "being forced into oblivion" by the usurpation of its jurisdiction over rates.

Mr. Thorne also testified before the Senate committee on Tuesday, objecting to the proposed basis of compensation as too high and urging an amendment to provide for the reduction of the guarantee in the case of roads that had failed to maintain their properties adequately.

Before the House committee Glenn E. Plumb, representing

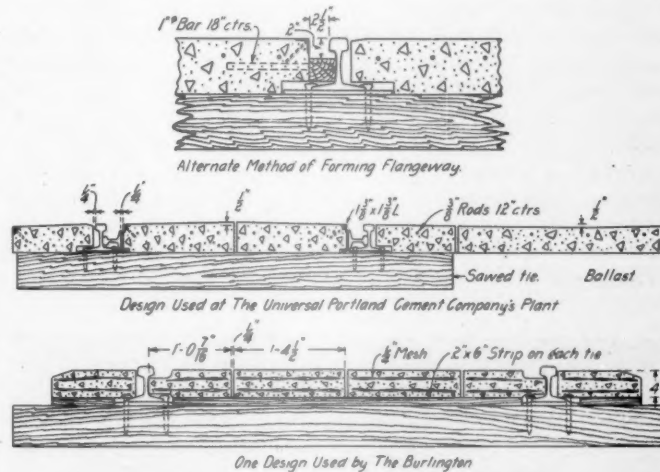
the railroad brotherhoods, repeated the argument he has used in the valuation hearings that the railroads do not own their property, but are limited by their charter provisions to the right of way over it. He proposed an amendment providing that the Interstate Commerce Commission shall determine the amount on which each company is entitled to a return, and that the return shall be a percentage of this amount. Pending the determination of the amount he would allow the roads to be paid their average net operating income with provision for a refund of any excess.

Nathan L. Amster of Boston also testified. Both committees expected to complete their hearings this week.

## Concrete Highway Crossings

EXPERIMENTS WITH THE USE OF CONCRETE as a substitute for timber in crossing planks have been in progress on several railroads in the middle west for various periods up to two years and have demonstrated the merits of this material. A recent study of these installations by the engineers of the Universal Portland Cement Company has led to the preparation of a new design that is to be used at the various crossings of railway tracks and highways in the plant of this company at Buffington, Ind. The drawings and photographs illustrate the manner in which the crossings have been worked out in several cases.

This concrete construction has taken two somewhat different forms. On the Chicago, Burlington & Quincy, which has installations at Hannibal, Mo., at La Grange, Ill., and at Dowers Grove, the design is almost an exact concrete equivalent of the usual wooden planking. Each concrete plank is  $4\frac{3}{4}$  in. thick, 8 in. wide and 8 ft. long, except that every alternate



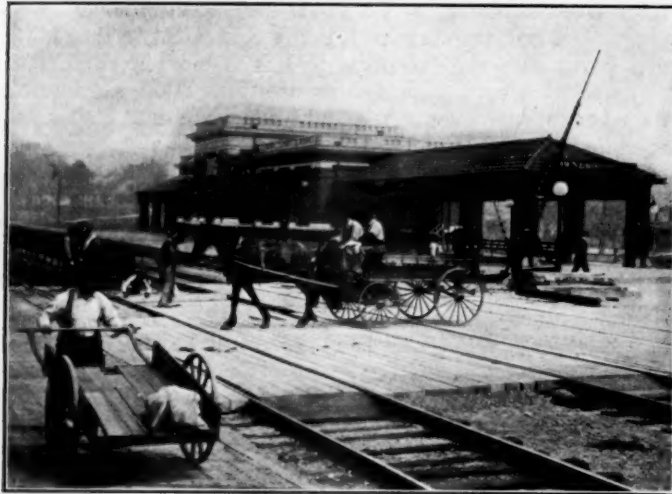
Typical Designs of Concrete Crossings

end plank is 4 ft. long to permit breaking the joints. The reinforcement consists of American Steel & Wire Company No. 27 triangular mesh and four  $\frac{1}{4}$ -in. square bars. As the planks are not as deep as the rail, they are supported on 2-in. by 6-in. wooden strips laid on top of the ties.

On the Chicago, Milwaukee & St. Paul and the Cedar Rapids & Iowa City (electric) at Cedar Rapids, Iowa, and in the yards of the Illinois Steel Company, at South Chicago, concrete crossings have been installed, in which use is made of concrete slabs that are considerably larger than the planks. Those between the rails of the track are of such a width that only two lines of them are required. The slabs at Cedar Rapids are only 8 ft. long so that two are used to make a 16-ft. crossing, while those at South Chicago are 5 ft. 6 in. long, requiring three for a 16-ft.-6-in. crossing. The slabs at both places have a thickness equal to the height of the rail

so that they rest directly on the ties without the use of filler blocks or strips. It has been the idea in all of the concrete crossings to make the top surface level with the rail, except that in the case of the new design for the Universal Portland Cement Company, the slabs are crowned  $\frac{1}{2}$  in. on the center line of the track and depressed  $\frac{1}{2}$  in. on the center line between tracks.

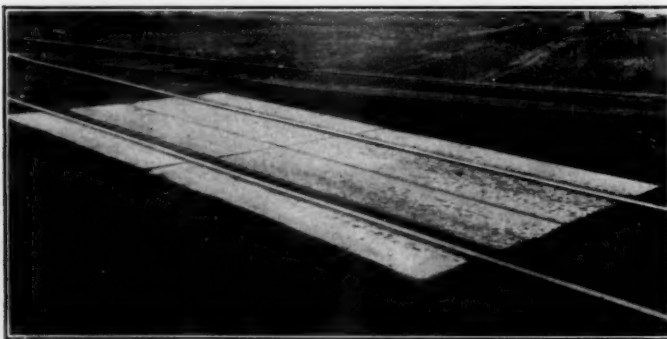
The formation of the flangeway on the gage side of the rails is an important detail and was provided for in nearly all of the cases mentioned by some form of all-metal flangeway such as that obtained by a rail laid on its side with the head bearing against the web of the running rail, or with the use of an angle iron, supported on a wooden strip to give



A Concrete Slab Crossing Installed by the Burlington at Downers Grove, Ill., in May, 1917

the desired elevation. With a flangeway formed in some such manner, no special detailing of the concrete slabs is necessary, although it is desirable to protect the edge of the slab adjacent to the flangeway by means of a metal guard. In the Universal Portland Cement Company's design a Kahn curb bar is used. One of the drawings shows a Burlington design in which the slab is notched out to fit under the rail and provide an adequate flangeway without the use of an extra rail or an angle bar.

Some question has been raised as to the need of fastening the units of the concrete crossing in place, and the use of



A Crossing Installed at Cedar Rapids, Ia.

lag screws driven through holes cast in the slabs has been suggested, but in none of the installations recorded has it been considered necessary to take this precaution. In the concrete plank design used by the Burlington there has been some tendency for the row of planks next to the rail to creep but this has been overcome by driving a stake at one or both ends of the row.

A detail that is of far greater importance is the provision of a ramp at the ends of the crossing to insure that dragging

brake beams or other parts of cars will be carried safely over the top of the crossing, instead of catching on or underneath the ends. At South Chicago, a ramp of this kind has been built up of wooden planks, while on the Burlington a steel plate is used for this purpose.

### Construction

It is generally found of advantage to build units for use in installations of this kind at concrete plants where other unit construction work is carried on. The work in the field is then restricted to the preparation of the foundation and the lifting of the units into place. On the Burlington the slabs placed in the space between tracks were founded on a sand cushion tamped by means of a 25-lb. tamper and carefully leveled off. The slabs were placed  $\frac{1}{2}$  in. below the top of rail, but after two or three days' service some of them worked up flush with the top of rail. The joints between the slabs were also filled with sand. At the Illinois Steel Company crossing at South Chicago, granulated slag was used for the foundation bed and filling material.

### Service

The two crossings at Cedar Rapids have been in use for nearly two years and the crossing on the Burlington at Hannibal, Mo., has passed through one winter, while those at the other two locations on that road have been in service since early in the spring. The conclusions based on an examination of these crossings after this service indicate that the concrete crossing planks afford a serviceable permanent construction. The units are readily kept in place, and with a grade of material and workmanship suited to the purpose, the concrete will stand up well under the vehicle traffic. The principal advantage of this form of construction is that it affords a roadway surface that compares favorably with that of any pavement that may be in service on either side of the tracks while retaining the ready removal feature so necessary for the proper maintenance of track.

**MATERIALS NECESSARY FOR A SINGLE AIRPLANE.**—The following figures, according to the Official Bulletin, have been received from the Signal Corps, Aviation Section, of the materials necessary for a single airplane of the more simple type, and exclusive of all the materials necessary for the engine:

Nails .....	4,326
Screws .....	3,377
Steel stampings .....	921
Forgings .....	798
Turnbuckles .....	276
Veneer .....	57
Wire .....	3,262
Varnish .....	11
Dope .....	59
Aluminum .....	65
Rubber .....	34
Linen .....	201
Spruce .....	244
Pine .....	58
Ash .....	31
Hickory .....	1 1/4

**GAGES IN WARFARE.**—Most military lines constructed within the past three years have been either on the standard gage or on the 3-ft. and meter gages, but 2-ft. lines have also been of considerable use. Speaking generally the standard gage carries men, material and food to within some miles of the trenches, railhead going forward in each fresh advance, while the meter gage lines, the so-called "trench railways," run thence to points well within the zone of fire. These narrow gage lines also serve as connecting links in the main system in much the same way as the Belgian light railways feed and tap the main lines in normal times, and we believe that in certain districts mixed gage lines have been laid as well. Results prove our frequent contentions as to the traffic handling capacities of narrow gage railways, subject to the proviso that the very heaviest artillery requires standard gage tracks for its transportation.—*Railway Gazette, London.*



# Pennsylvania Lines Specialize in Car Conservation

## Excellent Results Are Achieved by Promoting the Intensive Utilization of Car Space

**A** SAVING IN CAR SPACE equivalent to 24,000 cars is the enviable result achieved by the Pennsylvania Lines West of Pittsburgh in November, 1917, in its campaign for heavier loading of l. c. l. freight. This record represents the decrease in the number of cars required to handle the l. c. l. business of the lines in November, 1917, the last month for which statistics are available, as compared with the number used in July, 1912, the first month in which special attention was directed to intensive loading. The saving in cars was made possible by an increase in the average lading per car from 10,849 lb. in July, 1912, to 19,076 lb. in November, 1917, or 76 per cent. By conserving cars used for l. c. l. freight, more equipment has been made available for the movement of c. l. business. However, the road is not concentrating its attention on l. c. l. traffic exclusively, but is also directing its efforts to increase the average lading of c. l. freight.

Beginning with March, 1917, the road extended its intensive loading campaign, prior to that month applicable to l. c. l. freight only, to include c. l. business. The results achieved subsequently have been encouraging. A large number of commodities for which records have been kept since that time show increases in carload weights for September, 1917, averaging about eight per cent above March. The details of the work of stimulating the greater utilization of cars both in handling l. c. l. and c. l. traffic are carried on under the direction of J. W. Roberts, superintendent of freight transportation of the Pennsylvania Lines West, and under the immediate supervision of W. T. Wolff, superintendent of freight station service.

### Heavier Loading of Less-Than-Carload Freight

Previous to July, 1912, l. c. l. freight on the Pennsylvania Lines was handled without reference to the conservation of car space. When the intensive loading campaign was inaugurated there was considerable opposition to the plan on the ground that the delay incident to holding cars for capacity loading would result in a loss of traffic and that heavier loading would lead to an increase of damage claims. Neither objection has proved tenable. The holding of cars for heavier loading has actually expedited the delivery of l. c. l. freight, inasmuch as it has facilitated the movement of traffic to destination or the nearest transfer point, thereby opening the way for extensive consolidation of loading classifications, with a resultant saving in cars.

Damage claims are no more attributable to heavy loading than to light loading. Damage results from *improper* loading, not intensive loading. In fact, a well-stowed car loaded to capacity is less liable to damage than a car only partially filled.

To reduce loss and damage claims to the minimum the Pennsylvania Lines has issued a booklet of detailed instructions for the stowing and bracing of l. c. l. freight, and has taken special pains to employ experienced stowmen or stevedores to stow and brace freight in cars. In the first few years following the inauguration of intensive loading of l. c. l. freight, Mr. Wolff, as the special representative of the superintendent of freight transportation, spent considerable time on the road keeping in personal touch with the freight agents at the large stations of the system. Each agent was required to prepare a daily report of cars loaded at his station, from which monthly statements were drawn showing the average pounds per car of l. c. l. freight forwarded from each

station shipping five cars or more per month, as well as for each division as a unit.

### Establishment of Rule Prescribing Minimum Carloads

In August, 1912, an order was issued requiring agents to hold cars until they contained 10,000 lb. or more of freight if destined to a station on another division, or 4,000 lb. or more if consigned to a station on the same division. This practice of holding cars for loads is equivalent to the sailing day plan, with the exception that it is more flexible, i. e., no particular days of the week are designated as shipping days but cars are merely held until they contain at least minimum lading.

The records kept by the freight agents enable the superintendent of freight station service to reprove an agent or division superintendent if cars are forwarded lightly loaded. The following form letter is one which has been used to inquire why lightly loaded cars have been forwarded contrary to the rule:

PENNSYLVANIA LINES WEST OF PITTSBURGH.

Office of the Superintendent of Freight Station Service

Pittsburgh, Pa.,.....

Mr. ....  
Supt. ....Div.

On .....191 .....Station loaded and  
forwarded .....Carded to .....  
with only .....lb. of freight. Please advise  
as to this light loading. See Rule 2, General Notice 65. ..

W. T. WOLFF,

Supt. of Fr't Station Service.

The fixing of minimum carload weights for l. c. l. freight, was merely a starting point in the intensive loading campaign. Subsequently, instructions were issued providing that all cars used for the movement of l. c. l. business must be loaded to cubical capacity.

### Monthly Bulletins Show Improvement or Decline in Loading

On about the seventh day of each month the superintendent of freight station service issues a bulletin showing the average pounds per car of l. c. l. freight handled on each division and at each station forwarding 15 or more cars per month. The monthly standing of a station or division is a source of pride and interest to each division superintendent and freight agent. It is thoroughly understood, of course, that differences in local conditions may make it difficult for one agent or superintendent to compete with another, but nevertheless an improvement on the part of any station or division proves a source of satisfaction to the officers responsible. One of the sources of strength, of the intensive loading campaign, has been the fact that personal letters of commendation are often sent to freight agents and division superintendents when they effect increases in the average pounds per car forwarded from their stations or divisions.

Prior to October, 1917, statistics for the loading of l. c. l. freight included only those stations forwarding five cars or more per month and beginning with October, 1917, the statistics were further restricted to stations which forwarded 15 cars or more per month. This new rule was put into effect, not at the instance of the Pennsylvania Lines West, but in pursuance of an order of the Commission on Car Service of

the American Railway Association, applying to all member railroads in the country.

### Comparative Statistics of L. C. L. Loading

In November, 1917, the average lading per car of l. c. l. freight was 17,860 lb. for the Central system and 19,521 lb. for the Southwest system of the Pennsylvania Lines West, or the highest averages ever attained for these two systems. The increases in loading over July, 1912, for the Lines West as a whole and its three constituent systems are as follows:

	Average lading L. C. L. freight in pounds		Increase in pounds	Per cent increase
	November, 1917	July, 1912		
Pennsylvania Lines West.....	19,076	10,849	8,227	75.83
Southwest system .....	19,521	10,655	8,866	83.20
Central system .....	17,860	9,029	8,831	97.80
Northwest system .....	18,819	11,463	7,356	64.17

Each system also showed increases in the average lading per car of l. c. l. freight forwarded in November, 1917, over November, 1916. The increase for the entire road was 1,459 lb. per car, or 8.28 per cent; for the Northwest system, 408 lb., or 2.21 per cent; for the Central system, 3,036 lb., or 20.48 per cent; and for the Southwest system, 1,988 lb., or 11.33 per cent. Although the total l. c. l. traffic handled in November, 1917, was considerably below that of the same month of 1916 and somewhat smaller than that of July, 1912, this decrease was not due to the loading methods of the road, but to chronic embargoes and to the fact that, as previously stated, effective October, 1917, the monthly statistics include only stations forwarding 15 or more cars per month instead of five or more cars per month. The records for March, 1917, show conclusively that heavier loading has not led to a loss of business. The volume of l. c. l. traffic forwarded in that month surpassed all previous records and was moved with 29,000 fewer cars than the total l. c. l. business of July, 1912.

Of the 118 stations on the Pennsylvania Lines West for which statistics were prepared in November, 1917, 22 achieved the highest loading records ever made at those stations. The station at Economy, Pa., which stood forty-first in rank of loading in November, 1916, was third in rank in the same month of 1917; Allegheny, Pa., rose from thirty-eighth in rank to fourth in the same period, and Chicago (Dairy Station) from twenty-seventh to sixth. Other stations showed like improvement. The comparative loading

year. These factors have affected some stations more seriously than others, and in some instances account for the less favorable showing of stations which made good records a year ago. In spite of these difficulties, it is quite well established, on the Pennsylvania Lines at least, that the holding of cars for two or three days to secure full lading does not work a hardship on shippers, because it permits a longer haul without interruption at transfer or intermediate points, thereby eliminating costly delay.

### How Heavier Loading of C. L. Freight Has Been Accomplished

Intensive loading of c. l. freight is more difficult to effect than intensive loading of l. c. l. freight because its success rests almost entirely with the shippers; the railroads are able only to assist by suggestion and by furnishing the shippers with statistics indicating whether or not their efforts have produced good results. The Pennsylvania Lines West keeps monthly records of all cars loaded with the heavier commodities, giving the average lading for each commodity and for each individual shipper. In the case of some commodities of low specific gravity arbitrary maximum carload weights were established which were found, through experience, to be within the bounds of physical possibility. These bases were established, instead of following the policy of asking that all cars be loaded to 110 per cent of the stenciled capacity, a plan which in many cases would serve only to antagonize the shipper. Under this scheme the standard lading for earthenware was placed at 28,000 lb. per car regardless of stenciled capacity, that of oats at 65,000 lb., that of flour, corn, wheat and barley at 96,000 lb. if loaded on cars stenciled 100,000 lb. capacity, and if loaded on cars stenciled under 100,000 lb., at marked capacity plus 10 per cent. The standard lading for tinplate, steel shapes, nails, cement, stone, salt, brick, lime, tinplate bars, steel and soda ash (dense), ballast, gravel, sand, limestone, pig iron, structural steel, sheet steel, bar steel and flux was placed at 10 per cent above the stenciled capacity, as all of these commodities are of high specific gravity.

Each report prepared by the railroad shows the percentage of capacity utilized for the current month and the preceding month, indicating to the shipper whether or not he is making any improvement. The accompanying table is a sample of a monthly report showing carload averages for a number of typical commodities. On the basis of a maximum stand-

STATEMENT SHOWING LOADING OF CARLOAD FREIGHT IN JULY, 1917

Commodity	No. of cars checked	Total weight of commod- ity loaded into cars	Average pounds per car loaded	Total capacity (lbs.) of cars checked	Average capacity (lbs.) per car	Percentage of capacity utilized		Per cent increase	Per cent decrease
						July, 1917	June, 1917		
Tin plate .....	373	31,380,212	84,129	33,869,000	90,801	92	83	9	..
Iron .....	111	7,808,596	70,350	9,405,000	84,739	83	78	5	..
Sheet steel .....	42	3,505,816	83,471	4,026,000	95,857	86	77	9	..
Cement .....	734	57,647,059	78,538	59,301,000	80,791	97	97	..	..
Stone .....	640	69,786,400	109,041	74,893,000	117,015	93	89	4	..
Flux .....	412	43,707,800	106,087	46,365,000	112,536	94	96	..	2
Soda ash (dense).....	43	3,520,795	81,878	3,613,500	84,034	97	92	8	..
Brick .....	505	39,897,850	79,005	42,872,500	84,896	93	92	1	..
Flour .....	16	873,970	54,623	1,288,000	80,500	68	81	..	13
Wheat .....	22	1,716,100	78,004	1,974,000	89,727	87	99	..	12
Corn .....	172	12,279,240	71,391	14,741,000	85,703	83	87	..	4
Oats .....	173	9,843,318	56,900	11,245,000	65,000	87	75	12	..

averages, percentage increases, and standings of the three stations mentioned are given below:

Station average lading in pounds	Increase in per cent		Rank among stations		
	Nov., 1917	Nov., 1916	Nov., 1917	Nov., 1916	
Economy, Pa. ....	31,216	19,206	62.53	3	41
Allegheny, Pa. ....	30,317	19,391	36.30	4	38
Chicago (Dairy Station) ..	28,438	21,188	34.21	6	27

In general, the continuous loss of experienced labor to other industries offering higher wages, has intensified the difficulties which the ever-changing multiplicity of embargoes has placed in the way of heavier loading during the past

and carload for each commodity the loading record for 28 of the most important commodities was 92 per cent in July, 1917, as compared with 85 per cent for the preceding month:

Considerable improvement has been effected in the loading of coal. In general, coal is now loaded to 100 per cent of cubical capacity, or about 5 per cent above the average lading for May, 1913.

On October 1, 1917, the Commission on Car Service of the American Railway Association issued an order directing that all carloading records be based on 110 per cent of the stenciled capacity of the car. While commodities of low specific gravity make a poor showing under this plan as com-



pared with those of higher specific gravity, this order has the advantage of establishing a universal basis from which intelligent comparisons can be made between different railroads. If, under this scheme, freight of low specific gravity registers but 33,000 lb. when loaded to the cubical limits of a car of 100,000 lb. capacity, it will be understood by the shipper and the railroad alike, that a load of 30 per cent of the stenciled capacity of the car, plus 10 per cent, constitutes the best that can be done with that commodity. On the other hand, in comparing the records of one road with another, the lines handling commodities of low specific gravity will, under this plan, show up at a disadvantage with lines handling heavy commodities.

### Comparison of Monthly Records of Commodity Loading

The Pennsylvania Lines' records for October and succeeding months have been prepared in accordance with the order of the Commission on Car Service. As a result, the average loading percentages for commodities of low specific gravity have fallen considerably. For instance, the loading of earthenware which averaged 103 per cent of what the railroad considered a maximum lading in September, fell to 33 per cent in October. Likewise, enamelware fell from 91 per cent to 25 per cent, stoneware from 95 per cent to 36 per cent and flour from 73 per cent to 69 per cent. In spite of these decreases on account of the new method of calculation, the lading of 33 commodities for October averaged 91.5 per cent of 110 per cent of stenciled car capacity, as compared with an average of 92 per cent for September on the old basis of arbitrary maximums for different commodities. The holding up of the average is accounted for by the fact that substantial increases in average carload weights were effected for commodities of high specific gravity. The following statement indicates the percentage of capacity utilized in loading various commodities of c. l. freight both on the new basis, for the month of October, and on the old basis, for preceding months:

TABLE INDICATING PERCENTAGE OF CAPACITY UTILIZED IN LOADING VARIOUS COMMODITIES OF CARLOAD FREIGHT, AS ASCERTAINED BY A MONTHLY CHECK

Commodity	March	April	May	June	July	Aug.	Sept.	Oct.
Billets .....	..	..	..	..	94	93	90	96
Cement .....	92	97	98	97	97	98	98	99
Earthenware .....	94	92	87	87	91	103	103	33
Enamelware .....	..	..	..	..	90	99	91	25
Flour .....	63	77	70	81	68	64	73	69
Nails .....	60	65	61	61	67	68	74	75
Oats .....	82	83	84	75	87	91	94	74
Stone .....	86	88	90	89	93	94	93	96
Stoneware .....	..	..	..	..	94	94	95	36

One of the greatest obstacles in the way of the more intensive loading of c. l. freight is the trade unit basis of doing business in various industries. Trade units date back to the time when cars were smaller, and are based on what were then considered well-filled carloads. The Pennsylvania Lines West, in common with other railroads, is doing all it possibly can to induce shippers' and manufacturers' associations to discontinue this method of doing business, and to base all orders on a modern c. l. basis, i. e., the loading of cars to full cubical or stenciled capacity. They have been assisted materially by the National Industrial Traffic League and its various car service committees throughout the country, which have brought home to the individual shippers the great importance of this change in methods. Some shippers have gone so far as to refuse orders which do not permit heavy carloading.

### Intensive Loading Important Both in War and Peace Times

In the intensive loading of l. c. l. freight the Pennsylvania Lines West was a pioneer among American railroads. The persistent campaign which it has carried on in this direction has resulted in an increase of over 75 per cent above the

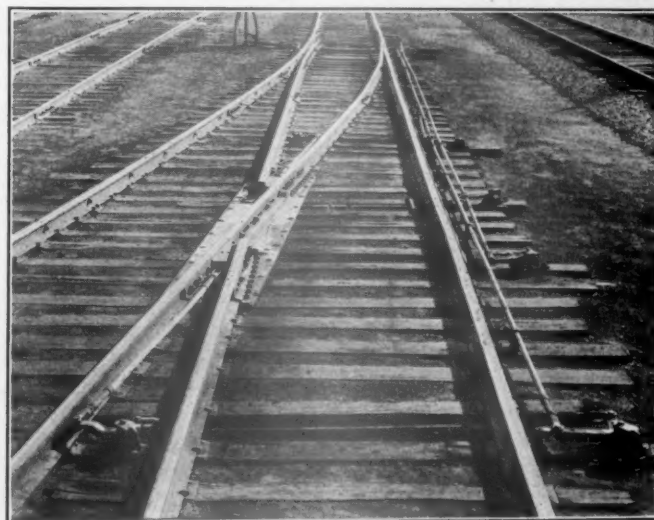
average lading per car when l. c. l. freight was handled without reference to car conservation. This saving in car space is reflected in a decrease of about 25,000 cars per month in the equipment required to handle the total l. c. l. business of the lines.

Heavier loading of c. l. freight has come into prominence only recently because it is a matter almost entirely under the control of the shipper. The great volume of traffic which has been pressing for shipment during the past two years, and the prime importance of expeditious transportation since the entrance of the United States in the war has forced shippers and consignees to conserve railroad equipment by releasing cars more quickly, and by utilizing available car space more fully. The Pennsylvania Lines West has been able to stimulate heavier loading of c. l. freight since last spring because shippers have been in the frame of mind to give consideration to the suggestions of the road.

The loading of many commodities has been increased appreciably through the co-operative efforts of the railroad and shippers. Cement, which was loaded to 92 per cent of car capacity in March, 1917, showed a percentage of 99 in October; the loading of nails increased from 60 per cent to 75 per cent in the same period; stone from 86 per cent to 96 per cent. The more important commodities (exclusive of coal) were loaded 7.5 per cent heavier in October than in March, 1917, despite the fact that the computation of loading percentages on the basis of stenciled car capacity, introduced in October, resulted in marked drops in percentage for some commodities. Car conservation, whether applied to l. c. l. or c. l. traffic, is particularly important in war times and is likely to receive even more attention if the freight traffic of the country continues to increase in volume. Of paramount consequence in war times, it is a practice worthy of continuance after the return of peace.

### A Substitute for the Frog

FROGS IN TURNOUTS are a constant source of wear and tear to rolling stock and track and on lines of heavy traffic frog maintenance and frog renewals become very burdensome. For this reason any device of practical application that will replace the frog and eliminate the flange-



A Walls Frogless Switch Operated from a Switch Stand

ways which destroy the continuity of the rail tread is of interest to railway men in charge of track matters. An appliance of this kind has been developed which consists of a short length of rail mounted on a pivot so that it can be swung

into line with the running rails of either track. The movement is accomplished by a system of rods and levers actuated from a switch stand or interlocking plant. A suitable locking device is provided to secure the rail in line for either track, the arrangement being such that the switch stand lever cannot be locked unless the locking bolts of the swing rail have been fully driven home. When connected with an interlocking plant it conforms to the usual locking requirements.

All parts of this device exposed to the traffic are mounted on a steel plate which is spiked to the ties. The four rail ends are fastened to this plate by means of bolts and suitable cast steel blocks bolted to both the plate and the rail so that there is no opportunity for the rails to run under the effect of traffic and temperature. The swing rail is supported for its entire length by two cast steel bars, having the general shape of two supporting rail-joint bars except that each one of them is provided with bolts which lock the rails into position by passing into holes in the cast steel blocks supporting the ends of the running rails.

In the earlier designs, illustrated in the photograph, the swing rail was moved by rods attached near its end, and

was locked by means of rods driven end-wise between the stock rails. In the improved design, the working mechanism is contained in a cast iron drum located directly under the pivot and the operating rods entering this drum are below the top of the ties. The operating mechanism consists of two concentric shafts, one to swing the rail and the other to lock and unlock it.

The photograph shows one of these frogless switches in service in the eastbound freight track of the Atchison, Topeka & Santa Fe, at Argentine (Kansas City), Kan. This installation is operated from a switch stand and has been in service for over four years. The anchoring of the ends of the running-rails to a plate makes it possible to reduce the clearance between the abutting ends of the rails to a very small amount. In consequence wheels pass over this joint with but little jar. The device requires much less metal than the usual frog and obviates the need for guard rails. All parts of the device subjected to wear from traffic can be renewed readily and in a short time.

The device is manufactured by the Walls Frogless Switch & Manufacturing Company, Kansas City, Mo.

## Supreme Court Decisions Affecting Railroads

### Interstate Commerce and the Relations Between State and Federal Regulating Authorities

THE UNITED STATES SUPREME COURT on January 14 rendered two important decisions in cases involving the relations between state and federal authority in matters affecting interstate commerce. In one case the order of the Texas railroad commission imposing penalties for failure to run passenger trains within 30 minutes of the advertised schedules was held to be an unlawful interference with interstate commerce. In the other the court sustained the dismissal of suits brought by the Illinois railroads in the effort to have set aside the Illinois two-cent fare law on the ground of the Interstate Commerce Commission's order requiring the removal of the discrimination against interstate commerce. While the court repeated the principles of its decision in the Shreveport case, that the federal power is ample to remove discriminations arising from the relation of state and interstate rates, it held that the uncertainty of the commission's order was such that it could not be used to nullify the effect of the state law. The Illinois case came before the court on cross appeals by the Illinois railroads and the state authorities from a decision by Judge Landis of the district court for the northern district of Illinois. An abstract of the decision is as follows:

#### The Illinois Case

These cross appeals present a controversy over the validity, scope and effect of an order of the Interstate Commerce Commission dealing with discrimination found to result from a disparity in interstate and intrastate passenger rates. For some years prior to December 1, 1914, interstate passenger rates between St. Louis and Keokuk on the one hand and points in Illinois on the other were on a substantial parity with intrastate rates between East St. Louis and Hamilton, respectively, and points in Illinois. All were on a basis of 2 cents per mile, save that the rates to and from St. Louis and Keokuk included a bridge toll over the river. All other rates between points in Illinois were also on the same basis, any intrastate rate in excess of 2 cents per mile being prohibited by a statute of that State. On December 1, 1914, the rates between St. Louis and Keokuk, respectively, and

points in Illinois were increased by the carriers to 2½ cents per mile, plus bridge tolls, the parity theretofore existing being thereby broken. Following this increase the Business Men's League of St. Louis filed with the Interstate Commerce Commission a petition charging that the rates between St. Louis and points in Illinois were unreasonable in themselves, and, in connection with the lower intrastate rates, worked an unreasonable discrimination against St. Louis and in favor of Illinois cities, particularly East St. Louis and Chicago, and a like discrimination against interstate passenger traffic to and from St. Louis and in favor of intrastate passenger traffic to and from East St. Louis and Chicago. An association representing interests in Keokuk, Iowa, intervened and urged that any relief granted with respect to St. Louis be extended to Keokuk. The state of Illinois, the Public Utilities Commission of that state, an association representing interests in Chicago and another association representing interests in East St. Louis, also intervened and opposed any action contemplating or requiring an increase in intrastate rates. After a hearing the Interstate Commerce Commission filed a report finding that the existing bridge tolls at St. Louis and Keokuk were unobjectionable, that rates between either of those cities and points in Illinois were reasonable when not in excess of 2.4 cents per mile, plus bridge tolls, and that the service, equipment and accommodations provided for intrastate passengers to and from East St. Louis, Hamilton, and Chicago, were the same as those provided for interstate passengers to and from St. Louis and Keokuk. In that report the commission also found that the contemporaneous maintenance between East St. Louis and Hamilton, respectively, and other points in Illinois, of rates on a lower basis than those maintained via the same routes between St. Louis and Keokuk, respectively, and the same points in Illinois, bridge tolls excepted, gave an undue preference to East St. Louis and Hamilton and to intrastate passenger traffic to and from the latter points, and subjected St. Louis and Keokuk and interstate passenger traffic to and from those cities to an unreasonable disadvantage; that the existing disparity in interstate and intrastate rates worked an



unjust discrimination against St. Louis and in favor of Chicago in so far as the rates between St. Louis and points in Illinois approximately equidistant from those cities exceeded, by more than the bridge toll, the rates between Chicago and the same points; that the disparity worked a like discrimination against Keokuk and in favor of Chicago; and that the existence on the reasonably direct lines of the carriers in the territory between Chicago on the one hand and St. Louis and Keokuk on the other of intrastate rates on a lower basis per mile than the rates between that territory and St. Louis and Keokuk, bridge tolls excepted, operated to subject interstate traffic to an unreasonable disadvantage.

The commission then made an order intended to result in the installation of rates not exceeding 2.4 cents per mile between St. Louis and Keokuk, respectively, and points in Illinois and to remove the discrimination shown in the report; but shortly thereafter the commission recalled that order and filed a supplemental report indicating that lawful interstate rates between St. Louis and Keokuk on the one hand and Illinois points on the other could be defeated by the use of two tickets, one purchased at the interstate rate for a part of the journey and the other at the lower intrastate rate for the remainder, and therefore that the order should be so framed as to cover the rates between the intermediate points. In this connection it was said that the discrimination against interstate traffic resulting from the lower intrastate rates "would not be removed merely by an increase in the intrastate fares to and from the east bank points," and that "any contemporaneous adjustments of fares between St. Louis or Keokuk and points in Illinois, and generally within Illinois, which would permit the defeat of the St. Louis, Keokuk, East St. Louis, or any other east side city fares by methods such as described above, and which would thereby permit the continuance of the undue prejudice which we have found is suffered by St. Louis and Keokuk, and continue to burden interstate commerce," would not comply with the order.

In obedience to that order the carriers—of whom there were 29—took the requisite steps to establish and put in force interstate rates on a basis of 2.4 cents per mile between St. Louis and Keokuk, respectively, and points in Illinois, and those rates became effective. Then, believing the order required all intrastate rates in Illinois to be on a level with those interstate rates, bridge tolls excepted, the carriers proceeded to establish and put in force new rates between all points in that state on a basis of 2.4 cents per mile. This met with opposition on the part of the state authorities and the carriers severally brought suits against them, in the district court for the northern district of Illinois, to enjoin them from interfering, by civil or criminal proceedings, or otherwise, with the establishment and maintenance of such intrastate rates under the commission's order. The suits were consolidated and the present appeals are from decrees dismissing the bills for want of equity and dismissing cross bills of the state authorities for want of jurisdiction.

Mr. Justice Van Devanter, after making the foregoing statement, delivered the opinion of the court.

After discussing questions of jurisdiction the opinion holds that the district court had rightly disposed of the jurisdictional questions by entertaining the principal suits and declining to entertain the cross bills. The opinion continues:

Whether the suits by the carriers were rightly dismissed on the merits is the principal question, and its solution turns on the power of the commission to deal with discrimination arising out of a disparity in interstate and intrastate rates, and on the scope and effect of the order made.

In their answers the state authorities took the position that in so far as the order purports to authorize or require a removal of the discrimination found to exist by a change in intrastate rates it is in excess of any power that has been or can be conferred on the commission, and therefore neither relieves the carriers from full compliance with the state rate

law nor prevents that law from being fully enforced against them. If the premise were sound the conclusion doubtless would follow, for where the commission makes an order which it has no power to make the order is necessarily void, not merely voidable. But that the premise is not sound is settled by the *Shreveport* case, 234 U. S. 342. Upon full consideration it there was held:

1. Under the commerce clause of the Constitution Congress has ample power to prevent the common instrumentalities of interstate and intrastate commerce, such as the railroads, from being used in their intrastate operations in such manner as to affect injuriously traffic which is interstate.

2. Where unjust discrimination against interstate commerce arises out of the relation of intrastate to interstate rates this power may be exerted to remove the discrimination, and this whether the intrastate rates are maintained under a local statute or by the voluntary act of the carrier.

3. In correcting such discrimination Congress is not restricted to an adjustment or reduction of the interstate rates, but may prescribe a reasonable standard to which they shall conform and require the carrier to adjust the intrastate rates in such way as to remove the discrimination; for where the interstate and intrastate transactions of carriers are so related that the effective regulation of one involves control of the other, it is Congress, and not the state, that is entitled to prescribe the dominant rule.

4. It is admissible for Congress to provide for the execution of this power through a subordinate body such as the Interstate Commerce Commission, and this it has done by the act to regulate commerce.

5. Where in the exercise of its delegated authority the commission not only finds that a disparity in the two classes of rates is resulting in unjust discrimination against interstate commerce but also determines what are reasonable rates for the interstate traffic, and then directs the removal of the discrimination, the carrier not only is entitled to put in force the interstate rates found reasonable but is free to remove the forbidden discrimination by bringing the intrastate rates to the same level.

Upon further consideration that decision was approved and followed in *American Express Co. v. Caldwell*, 244 U. S. 617.

The parties differ widely about the scope of the order. The carriers assert that it covers every intrastate passenger rate in Illinois, is addressed to the removal of discrimination found to be state-wide, and gives ample authority for increasing all rates between points in Illinois from 2 cents to 2.4 cents per mile. On the other hand, the state authorities assert that it is not state-wide and that the extent to which it is intended to affect the state-made rates is so indefinitely and vaguely stated as to make it inoperative and of no effect as to them. Of course, the commission could adjust the remedy to the evil and make the order as broad as the wrongful discrimination; and not improbably it would intend to go that far and no farther. But the extent of the discrimination found and of the remedy applied must be gathered from the reports and order of the commission, for they constitute the only authoritative evidence of its action. The reports show that the only discrimination found relates to the passenger traffic between Illinois and two cities outside that state—St. Louis and Keokuk. There is no finding that this traffic extends in appreciable volume to all sections of Illinois. As to some sections its volume may be very large and as to others almost or quite negligible. At best the reports leave the matter uncertain. Obviously this traffic is only a small part of the interstate passenger traffic moving over the railroads in Illinois, and yet the finding is merely that there was discrimination against this part. Had the commission regarded the discrimination as state-wide it is but reasonable to believe that it would have said so in its

findings. And had it intended to require or authorize a state-wide readjustment of the intrastate rates it doubtless would have given direct expression to that purpose, which easily could have been done in a few lines. But neither in any part nor as a whole does the order plainly manifest such a purpose. In harmony with the reports it deals with the intrastate rates in so far only as they result in discrimination against interstate traffic to and from St. Louis and Keokuk. Its most comprehensive paragraph—the next to the last—declares that the carriers must “abstain from the undue preferences and the undue and unreasonable prejudices and disadvantages found in said report to result from the contemporaneous maintenance between Illinois points of passenger fares, which fares, in combination with other fares required or permitted by this order, would produce the discrimination against interstate commerce and the undue preference in favor of intrastate commerce condemned in the report of the commission.” But even here the general terms are so far restrained by the reference to the reports as to show that nothing more is intended than to command the removal of the discrimination to which the traffic to and from St. Louis and Keokuk is subjected. Besides, this paragraph evidently proceeds upon the theory that some of the intrastate rates are not affected by the other paragraphs, and ought not to be disturbed save where their use in connection with rates sanctioned by the order will be productive of the discrimination which it is intended to correct.

But while the order shows that it is not intended to require or authorize a readjustment of all the intrastate rates, the description of those to which it applies is at best indefinite.

There may be less uncertainty in some parts of the order than in others, but when each is read in the light of the rest and all in the light of the reports it is apparent that none has a certain or definite field of operation. The uncertainty arises out of a failure to designate with appropriate precision the territory or points to and from which the intrastate rates must or may be readjusted, and this omission accords with the absence from the reports of any finding showing definitely the territory or points where those rates operate prejudicially against the interstate traffic which the order is intended to protect.

To be effective in respect of intrastate rates established and maintained under state authority an order of the commission of the kind now under consideration must have a definite field of operation and not leave the territory or points to which it applies uncertain.

In construing federal statutes enacted under the power conferred by the commerce clause of the Constitution the rule is that it should never be held that Congress intends to supersede or suspend the exercise of the reserved powers of a state, even where that may be done, unless, and except so far as, its purpose to do so is clearly manifested. This being true of an act of Congress, it is obvious that an order of a subordinate agency, such as the commission, should not be given precedence over a state rate statute otherwise valid, unless, and except so far as, it conforms to a high standard of certainty.

We conclude that the uncertainty in this order is such as to render it inoperative and of no effect as to the intrastate rates, established and maintained under a law of the state, and therefore that the suits by the carriers were rightly dismissed on the merits.

#### The Texas Case

In the Texas case the court reversed the judgment of the lower court in a suit brought by the state of Texas to recover penalties for violation of an order of the State Railroad Commission. This order required passenger trains in Texas to start from their point of origin and from stations on the line in accordance with advertised schedule, allowing them

not exceeding 30 minutes at origin or points of junction with other lines to make connection with trains on such other lines, and not exceeding 10 minutes more if at the end of the 30 minutes the connecting trains were in sight. There were some other qualifications not necessary to be stated.

The defendant's passenger trains concerned were numbers 9 and 209, and were parts of a train, also numbered 9, of the Missouri, Kansas & Texas Railway, a different corporation, taken charge of by the defendant at Denison, Texas, about five miles south of the Texas and Oklahoma state line, under a contract with the Missouri, Kansas & Texas. In pursuance of this contract they were forwarded via Dallas and Fort Worth to Hillsboro, thence as one train to Granger and there again divided, the two parts going respectively to Galveston and San Antonio. There were similar arrangements for trains to the north. The cars received by the defendant came from St. Louis and Kansas City, Missouri, uniting at Parsons, Kansas, and thence proceeding south to Denison. The court of civil appeals at first held that the movement must be regarded as a continuous one from Kansas City and St. Louis, and that the order did not apply to the train; but on a rehearing decided that as the defendant took control at Denison with new crews and engines, and as the defendant could not go beyond the state line, the movement so far as the defendant was concerned was wholly within the state. Breaches of the order having been proved, it affirmed a judgment imposing a fine. A writ of error was refused by the supreme court of the state.

Justice Holmes in the decision said:

The supreme court gave up the manifestly untenable ground taken by the court of civil appeals and recognized that the defendant's trains were instruments of commerce among the states, but it construed the order as applying to them none the less and held it valid as so applied. The only question with which we have to deal is whether the state commission could intermeddle in this way, especially when there was sufficient accommodation for local traffic independent of the through trains. The defendant in error attempts to open this last matter, because the opinion of the court of civil appeals in which the fact was stated was reversed by it for a different reason, and that of the court of first instance was the other way. But we regard the decision of the intermediate and the supreme court as proceeding upon the assumption that we have stated and that we see no reason to disturb. Again, the question is not what the state commission might require of a road deriving its powers from the state, with regard to local business, *Missouri Pacific Ry. Co. v. Kansas*, 216 U. S. 262, 283, but whether the order if applied to this case would not unlawfully interfere with commerce among the states.

On its face the order as applied was an interference with such commerce. It undertook to fix the time allowed for stops in the course of interstate transit. It was a serious interference, for it made the defendant liable for an interstate train not starting on schedule time, when the train did not come into the defendant's hands, from another company in another state, until too late. This, as we understand the facts, was the train to which the advertised schedule applied, and if so, the mere statement of the result is enough to show that the burden imposed not only was serious but was unwarranted as well as unjust. The suggestion that compliance with the order could have been secured by having an extra train ready to run if the regular one was not on time hardly is practical, and is not an adequate answer, even in form. For the defendant advertised, or at least had the right to advertise, the interstate train, and, if it did so, would not free itself from liability for a delay on the part of that train by offering another. We think it plain that this order was applied in a way that was beyond the power of the commission and courts of the state.



## Report of Commission on Adamson Eight-Hour Law

The report of the commission of three appointed in 1916 to observe the operation and effects of the Adamson Eight-Hour law has been transmitted to the President and to Congress. It is signed by General George W. Goethals, chairman, E. E. Clark and George Rublee. The report contains, among other things, findings of the commission with regard to the effects of the institution of the eight-hour standard work-day upon wages and hours. It shows an increase in cost to the railroads, increase in wages in each occupation and class of service, increases in wages as affecting individual employees, amount of overtime payments and additional allowances, typical wages by occupations in relation to services performed, and average hours of service.

The eight-hour day, says the report, as a measure of a day's work for the purpose of reckoning compensation of certain classes of railroad employees, has become as accomplished fact, and it is not understood that the roads have any intention of further contesting the establishment of the eight-hour day for the employees concerned. The employees recognized by roads as entitled to the eight-hour basis under law are: Engineers, firemen, conductors, assistant conductors, baggagemen, brakemen and flagmen in road and yard service, and generally also hostlers. The average number of employees in these classes in the calendar year 1916 was about 17 per cent of the total number of railroad employees. The law does not limit the actual duration of work to eight hours per day.

As actually applied in practice, the eight-hour standard which is being observed in road service is the so-called speed basis of  $12\frac{1}{2}$  miles per hour. On a run of 100 miles or less, however, overtime begins after eight hours. Notwithstanding the permission of overtime the law has had some effect in reducing the actual hours of work. This is true

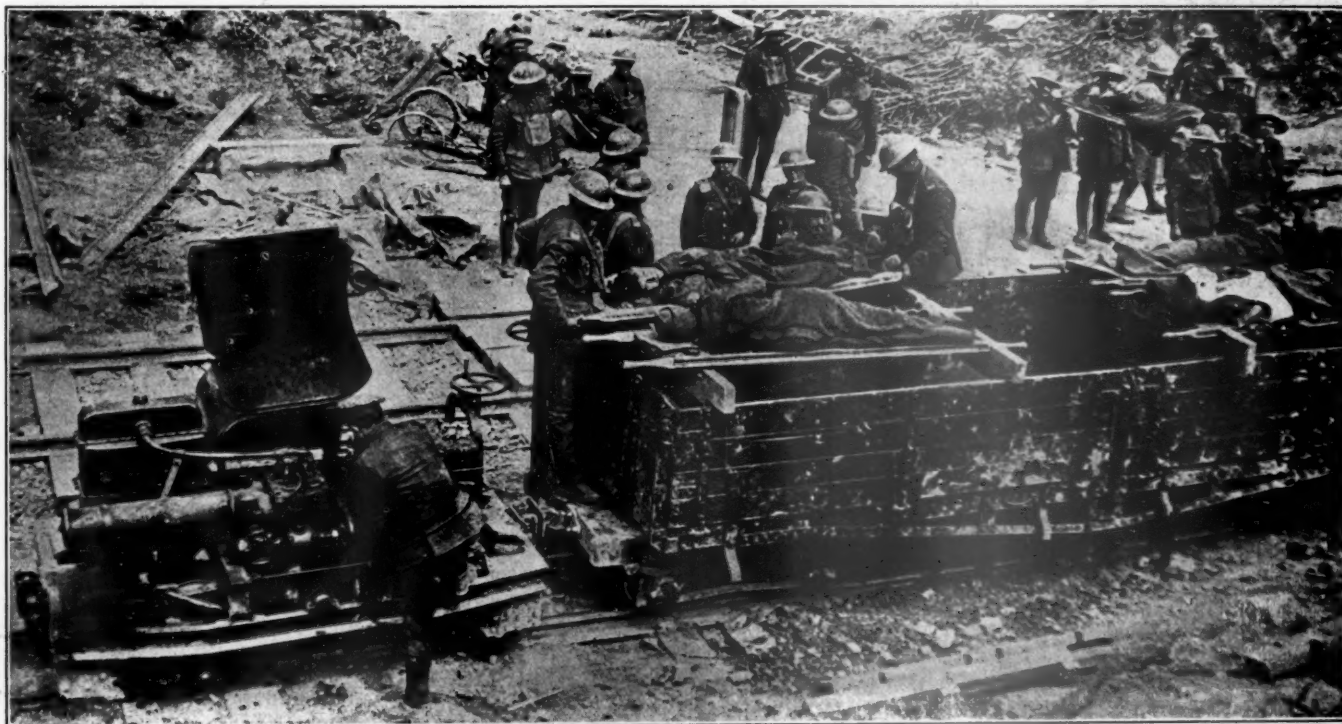
chiefly in yard service. Between March and October, 1917, over 11,000 yard crews were placed on eight-hour shifts.

In road service the reduction in hours has been slight. Where hours have not been reduced the law has had the effect of increasing wages. Detailed reports for the month of January, 1917, indicate that the law caused the addition of over \$61,000,000 annually to railroad operating expenses. To what extent economies may be introduced to offset this increase in expense cannot be stated. Except in short turn-around and suburban service passenger service is but little affected by the law. In road freight service the increase in wages averages about 15 per cent and about 25 per cent in yard service. Where there has been an actual reduction in hours the total pay of the individual is not necessarily increased by the eight-hour law, and his pay may actually be less than it was in the year 1916 before the law became effective.

A detailed study of the payrolls indicates that 12.6 per cent of the employees in the classes named received no increase in pay in January, 1917. Under the eight-hour law, 30.2 per cent received less than \$10 per month increase, 22.6 per cent received from \$10 to \$20 a month increase, and 34.5 per cent received \$20 or more per month increase. The figures are subject to modification to the extent that the hours of work have subsequently been reduced.

Concerning hours of labor, the report says that in the Eastern district in slow freight service the actual time during which engineers are on duty is from 12 to 13 hours per run. In the Southern and Western districts the corresponding figures are considerably smaller. In local freight service men work from 11 to 12 hours per run in all districts.

Among the subjects which receive special treatment are: speed and delays of freight trains, railway wage schedules and agreements, employment conditions in road and yard service, and practicability of an actual eight-hour day in railroad train service. The report itself is a book of about five hundred pages. Only a press summary was given out for general publication.



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Light Railway with Gasoline Engine Being Used for Transportation of Wounded Soldiers

## New Night Lights for Pullman Cars

**T**HE PULLMAN COMPANY has been experimenting for some time with various lighting arrangements designed to provide suitable illumination for the aisles of sleeping cars after the passengers have retired. A satisfactory installation has recently been developed and is now being applied to all new cars built and also to cars which pass through the shops for repairs.

It may be of interest to give a few details of the numerous installations which were tried before a method of lighting was evolved that would fulfill all the requirements. In one of the experiments a light was placed at the bulkheads at the ends of the aisles and shaded with an amber glass, with a view to providing a non-glaring light to illuminate the aisle at night. This was found to be unsatisfactory as it lighted the end sections to some extent. An attempt to secure the



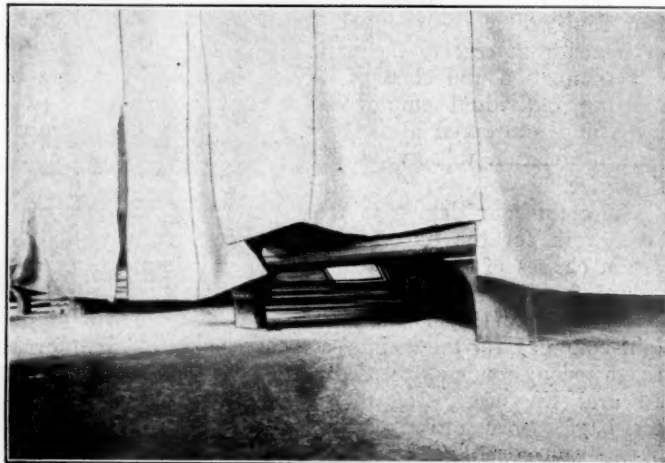
Sleeping Car Aisle Illuminated by Lights Under Seats

same results by dimming the ceiling lights also proved a failure. An installation with lights under the seat ends was tried, but the light was found to be annoying to the occupants of the lower berths opposite the fixtures. This objection has now been overcome by shading the light with a green glass.

The lighting arrangement which has been adopted for illuminating the aisles consists of 15 watt, 32 volt, type S tungsten lamps in receptacles placed under the ends of alternate seats. As the ends of the aisle are illuminated by the lights at the bulkheads it is not necessary to provide lights under the single seats in the end sections. Every second seat end on each side of the car carries one of the lighting fixtures, which are placed alternately on opposite sides of the car. Thus a 12 compartment car has 5 aisle lights and a 16 compartment car has 7. The lights are controlled at the

main switchboard, separate switches being used for the lights on the right and left sides of the car.

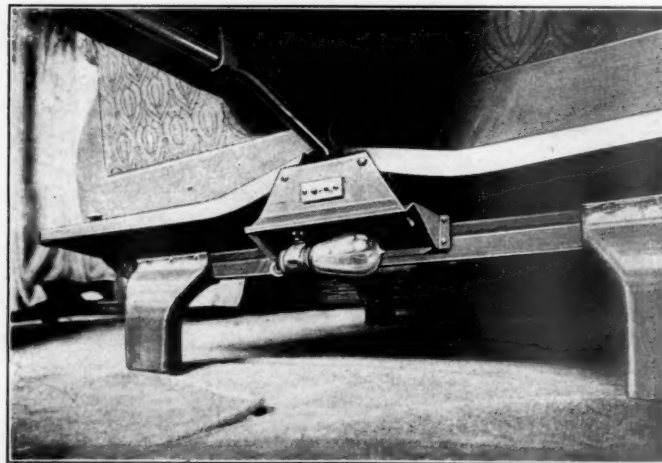
The fixture, which is attached to the aisle seat end and the seat rail, is pressed out of sheet steel. The base carries a small switch of the push button type which makes it possible to control each light individually. The lamp is placed in the fixture in a horizontal position, being held in place by a plain Edison type socket secured by a spring clip. The casing around the light, like the base, is of pressed steel.



Location of Aisle Light Under Seat End

In one side it carries a green glass which throws a subdued light over the floor. The connections are dust tight and with the exception of the green glass, which can readily be reached from the aisle, the parts will require cleaning at infrequent intervals. As will be seen from the illustrations all parts of the fixtures are easily accessible when the seats are removed and in case it becomes necessary to replace a lamp or any other part it can be done with little difficulty.

The Pullman Company is now planning to install fixtures



Lighting Fixture with Case Removed

similar to those used on the berths at the steps, to provide illumination for the treads. Clear glass, instead of green glass, will be used in these fixtures. Applications have been made by the Pullman Company for patents to cover the principal features of this system of lighting.

**AUSTRIAN FARES INCREASED 50 PER CENT.**—Austrian railway fares have been increased by 50 per cent since December 1.



## General News Department

**George Hodges**, chairman of the Committee on Relations Between Railroads of the American Railway Association, and its related committees, has been re-elected for a term of two years.

**Edwin F. Wendt**, member of the engineering board of the Interstate Commerce Commission, and past-president of the American Railway Engineering Association, has been elected president of the Washington Society of Engineers.

**Repeal of the Valuation Act**, under which the Interstate Commerce Commission is making a valuation of railway property, is the object of a bill which has been introduced in Congress by Senator King of Utah. It is Senate bill No. 3530.

**All freight must be unloaded** within seven days, if Congress should pass a bill, introduced by Senator Nelson of Minnesota on January 18. The Senator believes that this would be more effective than demurrage charges, to prevent cars from being used as storehouses.

**The shopmen of 29 roads** west of Chicago have laid before the director-general of railroads a request for better pay and for an eight-hour day; also for overtime rates for work done on Sundays and holidays. They want a maximum rate of \$6 a day and a minimum of \$3.50 for all shopmen, except carmen. The carmen want a maximum of \$5 a day.

**The steel manufacturers of Canada**, following conferences with the War Committee of the cabinet, have announced that the production of steel in the Dominion, this year, will be made 20 per cent more than last year, provided there is no failure of raw materials. Since the beginning of the war the railroads have suffered seriously from lack of rails because of the preferences given to makers of munitions.

**Commanding officers on troop trains** are forbidden to interfere with the schedules of the trains. This is an order from the War Department issued as a result of repeated protests from railroads. The railroads complained that officers on trains, ignoring carefully arranged schedules, have in some instances followed their own opinions as to where and when the trains should stop for resting or exercising the men, or for feeding and watering animals.

**Surprise tests on the Pacific system** of the Southern Pacific Company in the month of December numbered about 3,000. Among the most common tests are the removal of markers, extinguishment of lights, and the display of wrong numbers on caboose and engine indicators. In every test of this kind the trainmen detected the false condition and reported the error. The per cent of efficiency was 99.77. The few failures noted were mostly of a technical character, not involving the immediate element of risk.

### Western Society of Engineers Elect Officers

The Western Society of Engineers, Chicago, has elected Charles B. Burdick, consulting hydraulic engineer, Chicago, president; James N. Hatch, consulting mechanical engineer, first vice-president; Kempster B. Miller, consulting electrical engineer, second vice-president; A. S. Baldwin, chief engineer, Illinois Central, third vice-president and C. R. Dart, bridge engineer, Sanitary District of Chicago, treasurer.

### Railway Regiments' Tobacco Fund

The Machinery Club, New York, has voted to set aside one-third of the net profits of the cigar department for a tobacco fund for troops abroad and is dividing this third equally between the Railway Regiments' Tobacco Fund and the New York Sun Tobacco Fund. A check for \$295.94 has been received from E. A. Stillman, acting chairman of the House Committee of the Machinery Club, as the Railway Regiments' Tobacco Fund proportion of this distribution for the month of December.

### Another War Bonus in England

The English Government has granted another war bonus to railway workers, the fifth since the beginning of the war. The new bonus amounts to six shillings a week, bringing the total increase since February, 1915, to 21 shillings a week. The average pre-war wage was 30 shillings. The bonus to boys is increased to 10s. 6d. a week, while women and girls receive 8s. 6d. and 4s. 9d. extra a week, respectively.

### Report on Telegraph-Wire Disturbances

The California State Railroad Commission, summarizing the results of an investigation extending over five years, has compiled a large mass of material on questions connected with inductive interference with the operation of telegraph and telephone wires by parallel power circuits; and persons interested in the subject and desiring information may apply to Richard Sachse, chief engineer of the commission, 833 Market Street, San Francisco. The full report is not yet available.

This investigation has been made, at an expense of \$100,000, by the commission jointly with power companies and utilities interested in the subject.

### Freight Moving Week in New York

The "Clean-up Week" ordered by the director-general of railroads was badly neutralized by the severe cold and snow; but the freight stations in New York City reported considerable success, in spite of the obstacles. Substantially all of them report hearty co-operation on the part of the consignees and the steamships. The Lehigh Valley reported 1,418 loaded cars on hand on the 21st, as compared with 1,747 on the 14th, a decrease of 329. The New York Central reported a similar decrease of from 9,176 to 8,758.

The coal situation in New York City has been increasingly critical, not so much because of railroad congestion as from difficulty in getting boats across the river from New Jersey. More than half of the available tugs in the harbor were temporarily disabled by broken propellers or other damage caused by ice; and floating ice greatly reduced the speed of all water movements. Many barges were sunk while being towed through ice fields. Receipts of coal in the city have been from 20,000 to 25,000 tons daily when the normal needs aggregate 40,000 tons.

### Western Lines Move Large Quantities of Coal

Following the severe storm of January 11, 12 and 13, a protracted period of severely cold weather greatly handicapped railway operation in the Central West. As a result the Chicago terminal district and other transportation centers in the Middle West are congested at the time of writing, and interchanges of cars between roads are slower than under normal conditions. The danger of a coal famine, which caused the United States Coal Administration to stop the wheels of commerce for five days, January 18-22, led western lines to devote most of their attention to the movement of coal when train-operation was resumed after the storm. It was not until the 19th, however, that the railroads were able to move anywhere near the coal traffic they are capable of handling. In the 48 hours ending with midnight, January 20, fuel movements into the Chicago Terminal district by all roads with the exception of the Elgin, Joliet & Eastern, reached the high figure of 2,501 cars, of which 327 contained anthracite, 2,060 bituminous coal and 114 coke. During the same period 16 cars were delivered to industries, 693 cars were placed at team tracks and 93 at coal yards, while 2,226 cars in the district remained unplaced. Of the cars delivered 558 remained unloaded at the termination of the two-day period. Whether this rate of movement will be maintained depends upon whether the milder weather which made its appearance in the early part of the week continues.

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1917

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total.	Way and structures.	Equip-ment.	Traffic.				
Baltimore & Ohio.....	4,937	\$9,474,071	\$2,021,085	\$12,495,156	\$1,269,070	\$2,475,097	\$232,473	\$5,405,843	\$285,163	\$9,742,858	—\$376,266
Duluth, South Shore & Atlantic.....	601	285,506	95,067	380,573	62,131	42,530	6,053	1,000,000	10,785	286,673	—79,515
El Paso & Southwestern Co.....	1,028	888,989	185,968	1,074,957	117,425	125,707	23,102	292,352	31,796	597,460	—82,623
Kansas City, Mexico & Orient.....	272	51,174	14,176	65,350	10,387	25,396	5,007	48,589	6,658	96,037	6,325
Kansas City Terminal Co.....	24	106,653	2,586	109,239	16,633	17,834	.....	40,939	1,107	77,789	—34,333
Mineral Range.....	120	1,252,838	381,890	1,634,728	153,688	17,978	511	53,318	1,677	88,851	1,120
St. Louis Southwestern.....	1,754	49,899	50,880	100,779	159,535	222,025	45,950	446,017	50,491	926,965	650,970
Staten Island Rapid Transit Co.....	24	552,957	598,386	1,151,343	19,675	14,917	1,095	60,333	6,124	102,144	—8,403

## TEN MONTHS CALENDAR YEAR, 1917

Baltimore & Ohio.....	4,702	\$85,951,990	\$16,037,400	\$101,989,390	\$12,492,421	\$21,134,365	\$1,991,402	\$45,398,547	\$2,624,500	\$84,347,635	—\$257,300
Duluth, South Shore & Atlantic.....	601	2,503,507	890,779	3,394,286	627,141	458,722	73,183	1,338,944	90,837	2,882,191	—107,970
El Paso & Southwestern Co.....	1,028	8,817,957	2,033,993	10,851,950	1,073,344	1,343,086	207,994	3,051,986	296,439	6,046,195	201,176
Kansas City, Mexico & Orient.....	272	814,841	124,601	939,442	101,170	261,172	52,857	455,573	60,086	990,858	—90,306
Kansas City Terminal Co.....	24	939,916	29,979	969,895	89,814	143,795	.....	362,921	17,438	619,006	—120,261
Mineral Range.....	120	1,252,838	381,890	1,634,728	153,688	17,978	511	53,318	1,677	88,851	1,120
St. Louis Southwestern.....	1,754	10,609,735	2,559,979	13,169,714	1,526,399	2,486,869	466,804	4,040,311	50,491	926,965	650,970
Staten Island Rapid Transit Co.....	24	552,957	598,386	1,151,343	19,675	14,917	1,095	60,333	6,124	102,144	—8,403

## MONTH OF NOVEMBER, 1917

Alabama & Vicksburg.....	142	\$139,501	\$51,221	\$190,722	\$29,490	\$25,933	\$5,067	\$68,033	\$6,276	\$134,874	\$5,196
Alabama Great Southern.....	312	450,192	165,200	615,392	44,151	47,353	14,910	197,123	13,894	429,455	197,532
Ann Arbor.....	301	203,264	45,309	248,573	28,139	32,144	7,077	121,425	8,843	198,179	55,132
Arizona Eastern.....	377	274,200	48,148	322,348	33,311	36,146	2,534	83,073	16,101	176,678	21,111
Archibison, Topeka & Santa Fe.....	8,639	8,936,429	2,715,848	11,652,277	1,545,319	2,113,036	196,245	3,593,452	220,713	8,001,815	—61,382
Atlanta & West Point.....	93	88,729	61,005	149,734	16,345	24,471	6,218	53,892	5,953	109,457	—3,582
Atlantic, Birmingham & Atlantic.....	640	259,223	66,645	325,868	44,151	67,855	13,989	164,212	10,166	312,421	—72,396
Atlantic & St. Lawrence.....	166	127,810	22,610	150,420	46,702	36,772	4,799	124,250	8,417	220,941	—56,173
Atlantic City.....	170	84,816	83,978	168,794	52,136	6,528	1,390	124,303	9,911	185,228	2,436
Atlantic Coast Line.....	4,787	2,448,983	1,048,618	3,497,601	444,845	505,675	65,619	1,560,778	79,733	2,668,341	—187,300
Baltimore & Ohio.....	79	876,366	1,887,190	2,763,556	6,444	37,783	863	100,889	7,747	155,058	—32,491
Baltimore & Chesapeake & Atlantic.....	4,937	8,764,366	1,778,278	10,542,644	1,191,194	2,477,165	228,026	5,619,502	237,399	9,860,459	—942,078
Bangor & Aroostock.....	632	251,868	73,225	325,093	49,034	58,832	3,311	103,327	2,592	230,852	—1,509
Belt Ry. of Chicago.....	31	1,092,981	30,880	1,123,861	20,789	47,403	1,260	148,907	8,977	227,338	—39,578
Bessemer & Lake Erie.....	208	1,092,981	30,880	1,123,861	20,789	47,403	1,260	148,907	8,977	227,338	—39,578
Bingham & Garfield.....	36	299,024	4,384	303,408	129,459	281,026	10,624	366,678	30,668	794,825	—4,458
Birmingham Southern.....	44	86,544	21,912	108,456	23,204	38,766	1,302	48,030	2,538	113,970	—164,081
Boston & Maine.....	2,305	3,125,952	1,482,894	4,608,846	513,279	576,996	35,632	2,631,707	3,848	114,805	—5,051
Buffalo & Susquehanna R. R. Corporation.....	252	159,489	5,833	165,322	23,077	42,583	1,569	51,703	6,907	125,839	7,908
Buffalo, Rochester & Pittsburgh.....	386	1,177,429	103,470	1,280,899	138,660	402,071	14,289	539,811	33,905	1,130,806	—110,332
Canadian Pacific Lines in Maine.....	234	142,954	36,868	179,822	45,444	30,677	5,912	96,505	4,924	183,461	—13,897
Carolina, Clinchfield & Ohio.....	283	341,042	27,864	368,906	29,032	53,703	17,507	91,742	15,589	207,148	—13,500
Carolina, Clinchfield & Ohio of S. C.....	17	19,288	2,181	21,469	2,258	1,200	2,978	4,829	1,259	11,445	600
Central New England.....	361	428,436	23,612	452,048	87,375	65,304	1,342	178,106	10,989	345,141	—62,171
Central of Georgia.....	1,918	987,779	450,577	1,438,356	211,034	225,242	38,868	509,536	44,339	1,029,486	512,819
Central of New Jersey.....	683	2,479,039	529,629	3,008,668	273,716	580,247	26,361	1,416,986	66,959	2,881,021	30,178
Central Vermont.....	411	263,479	79,799	343,278	42,538	72,729	7,659	202,041	10,438	337,163	—163,920
Charleston & Western Carolina.....	342	175,765	47,539	223,304	28,918	38,187	4,598	82,775	4,132	145,560	25,082
Chesapeake & Ohio.....	2,478	3,925,835	686,260	4,612,095	581,202	860,133	59,719	1,779,543	97,904	3,406,813	82,627
Chicago & Alton.....	1,052	1,215,143	392,734	1,607,877	220,265	428,232	40,067	724,209	30,778	1,423,403	1,227,379
Chicago & Eastern Illinois.....	1,131	1,443,315	274,615	1,717,930	165,153	517,683	29,741	729,691	42,321	1,488,866	197,242
Chicago & Erie.....	269	686,365	46,545	732,910	108,328	107,807	18,666	333,813	16,783	517,549	—17,935
Chicago & Northwestern.....	8,107	6,640,577	1,930,347	8,570,924	939,020	1,691,526	104,435	3,855,088	82,999	7,325,000	86,750
Chicago, Burlington & Quincy.....	9,373	7,535,794	1,980,283	9,516,077	1,011,007	2,082,091	126,697	3,925,305	98,954	7,490,148	1,466,830
Chicago, Detroit & Can. Gd. Trk. Jctn.....	60	70,978	15,228	86,206	106,352	131,741	1,595	59,889	4,366	84,031	—2,031,287
Chicago, Great Western.....	1,496	922,871	362,845	1,285,716	142,678	291,875	43,163	571,548	39,713	1,105,103	18,775
Chicago, Indianapolis & Louisville.....	654	542,663	182,453	725,116	101,436	162,685	22,141	296,186	20,138	620,435	219,725
Chicago Junction.....	13	.....	.....	.....	39,779	26,942	1,272	163,569	5,504	263,806	—17,158
Chicago, Milwaukee & St. Paul.....	10,304	7,425,489	1,685,607	9,111,096	923,618	2,187,850	193,817	4,512,176	190,668	8,011,084	1,476
Chicago, Peoria & St. Louis.....	255	188,394	22,214	210,608	22,476	45,981	5,858	91,422	5,770	171,507	657,121
Chicago, Rock Island & Gulf.....	479	281,654	80,734	362,388	34,931	43,437	10,013	123,069	9,321	222,003	1,486,888
Chicago, Rock Island & Pacific.....	7,822	5,311,964	1,984,735	7,296,699	778,452	1,396,384	140,476	3,006,866	172,664	5,508,397	6,750
Chicago, St. Paul, Minn. & Omaha.....	1,752	1,288,159	461,637	1,749,796	211,329	266,358	31,096	908,465	44,946	1,469,832	123,399
Chicago, Terre Haute & Southeastern.....	374	333,174	19,151	352,325	38,044	120,341	4,557	128,486	9,541	288,750	374,471
Cincinnati, Indianapolis & Western.....	321	159,670	42,656	202,326	26,636	47,938	6,712	102,283	9,591	186,758	—287,137
Cincinnati, New Orleans & Tex. Pacific.....	337	781,484	238,981	1,020,465	76,294	280,281	26,310	441,403	20,246	851,016	—40,551



## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER, 1917—(Continued)

MONTH OF NOVEMBER, 1917—(Continued)															
Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of		Operating expenses			Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.	
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equip. ment.	Traffic.	Trans- portation.	General.						Total.
245 Innate Northern	2386	\$201,222	\$11,376	\$212,598	\$27,258	\$49,324	\$3,211	\$86,522	\$3,714	\$169,743	76.99	\$50,721	\$12,500	\$38,221	\$13,921
2386 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
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197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
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197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683	340,000	641,683	546,327
197 Innate Northern	2386	3,117,446	1,011,310	4,128,756	458,262	904,526	85,556	1,978,796	89,584	3,543,615	78.31	981,683			

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER, 1917—(Continued)

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Maintenance of equipment.	Traffic.	Trans- portation.				
Monongahela Connecting	5	\$567,522	\$145,383	\$712,905	\$25,964	\$30,759	\$367	\$89,728	103.98	\$5,788	\$8,241	—\$7,702
Morgan's La. & Tex. R. & S. Co.	401	1,029,978	307,781	1,337,759	68,639	68,455	121,331	14,810	51.68	32,273	32,273	48,707
Nashville, Chattanooga & St. Louis	1,236	1,029,978	307,781	1,337,759	68,639	68,455	121,331	14,810	51.68	32,273	32,273	48,707
Nevada Northern	165	193,542	140,266	333,808	254,358	254,358	51,418	560,292	74.17	369,295	100,000	—130,109
New Orleans & North Eastern	204	317,700	115,637	433,337	214,097	24,905	842	44,720	45.26	117,104	106,700	8,503
New Orleans Great Northern	285	120,508	31,637	152,145	48,505	85,010	9,796	179,734	71.41	135,066	88,074	—46,383
New York Central	191	144,631	23,380	168,011	15,895	28,258	3,207	56,228	69.99	47,676	10,402	10,359
New York, Philadelphia & Norfolk	6,082	13,165,880	4,439,105	17,604,985	171,800	15,162	4,979	42,125	55.51	76,438	4,007	14,953
New York, Chicago & St. Louis	571	1,253,981	89,930	1,343,911	2,499,732	4,146,201	284,486	8,416,203	79.19	4,228,764	1,095,190	—2,131,829
New York, New Haven & Hartford	1,997	3,441,623	2,814,573	6,256,196	1,403,157	234,924	45,053	713,722	82.96	339,074	55,000	115,597
New York, Ontario & Western	568	532,206	83,152	615,358	831,420	1,106,521	39,173	3,040,496	74.73	1,814,339	345,000	—608,254
New York, Susquehanna & Western	112	377,753	81,907	459,660	93,162	150,935	8,639	320,978	83.95	122,676	25,000	—26,563
Norfolk Southern	2,086	5,005,813	619,055	5,624,868	28,831	38,012	5,543	1,511,164	74.86	125,843	23,710	—34,738
Norfolk Southern	907	285,404	98,766	384,170	540,428	1,040,976	63,364	1,906,536	80.00	55,084	1,796,054	—14,706
Northwestern Pacific	6,533	5,973,618	1,283,170	7,256,788	50,958	65,003	7,577	194,445	80.92	79,277	20,000	—81,815
Oahu Railway & Land Co.	114	58,782	39,711	98,493	16,367	11,351	775	32,396	64.10	36,907	7,685	29,222
Oregon Short Line	2,406	2,186,735	492,226	2,678,961	248,709	307,931	33,815	852,757	54.15	1,319,531	334,712	984,738
Oregon-Washington R. & Nav. Co.	2,070	1,337,758	480,663	1,818,421	270,875	243,380	49,489	723,396	70.70	1,573,812	161,551	—95,994
Panhandle & Santa Fe	709	496,104	91,985	588,089	60,143	112,696	5,166	183,230	63.55	214,252	201,160	—284,354
Pennsylvania Company	1,754	4,930,392	1,096,903	6,027,295	908,478	1,421,969	78,315	3,047,383	83.07	1,154,679	377,373	777,157
Pennsylvania Railroad	4,562	14,297,428	4,364,429	18,661,857	2,455,687	4,907,808	199,462	9,374,429	85.72	2,975,234	922,429	2,047,646
Pere Marquette	19	14,315	5,496	19,811	9,737	11,351	775	32,396	92.20	7,562	9,500	—1,938
Philadelphia & Reading	1,127	4,895,284	637,605	5,532,889	227,737	322,708	847,845	59,211	75.43	486,168	41,790	—61,283
Philadelphia, Baltimore & Washington	1,127	4,895,284	637,605	5,532,889	227,737	322,708	847,845	59,211	75.43	486,168	41,790	—61,283
Pittsburgh & Lake Erie	1,127	4,895,284	637,605	5,532,889	227,737	322,708	847,845	59,211	75.43	486,168	41,790	—61,283
Pittsburgh & West Virginia	1,127	4,895,284	637,605	5,532,889	227,737	322,708	847,845	59,211	75.43	486,168	41,790	—61,283
Pittsburgh, Cincinnati, Chic. & St. Louis	2,398	4,575,592	1,106,441	5,682,033	686,834	1,379,258	95,024	2,650,456	79.14	1,317,526	264,155	—397,955
Pittsburgh, Shawmut & Northern	204	100,464	5,622	106,086	19,566	44,032	1,045	50,177	110.12	11,003	1,826	—2,931
Port Reading	21	220,480	1,352	221,832	15,992	15,992	40	80,976	43.72	139,856	10,500	66,324
Richmond, Fredericksburg & Potomac	87	173,426	218,182	391,608	18,311	48,104	3,420	158,679	54.78	260,341	30,398	76,072
Rutland	415	202,924	93,539	296,463	37,792	54,958	9,294	153,952	75.55	85,750	26,207	—39,297
St. Joseph & Grand Island	257	159,310	26,190	185,500	140,933	26,610	3,216	76,444	129.82	57,195	8,830	—13,134
St. Louis, Brownsville & Mexico	548	213,886	87,360	301,246	48,686	44,999	11,470	96,032	66.72	106,765	25,000	81,707
St. Louis Merchants Bridge Terminal	8,407	3,347,966	1,403,574	4,751,540	542,544	956,483	65,756	1,866,331	68.27	91,529	11,363	—113,435
St. Louis-San Francisco	4,752	3,347,966	1,403,574	4,751,540	542,544	956,483	65,756	1,866,331	68.27	91,529	11,363	—113,435
St. Louis, San Francisco & Texas	143	51,003	18,160	69,163	11,807	18,334	1,682	50,849	70.03	1,520,580	221,550	—293,528
St. Louis Southwestern	1,754	1,195,239	363,661	1,558,900	161,493	204,435	47,974	470,828	3.157	—6,155	9,312	—48,006
San Antonio & Aransas Pass	732	285,346	87,281	372,627	50,643	60,240	7,518	166,137	53.03	711,079	180,006	62,038
Seaboard	3,461	1,704,154	780,876	2,485,030	295,154	460,491	75,235	1,084,666	74.45	102,523	13,483	45,664
Southern	6,982	5,437,344	2,374,014	7,811,358	900,275	1,227,769	154,453	3,148,091	73.32	722,124	127,606	—260,838
Southern in Mississippi	278	71,185	48,604	119,789	26,116	8,831	1,955	50,959	66.41	2,845,151	372,698	109,033
Southern Pacific	7,102	7,919,149	2,847,792	10,766,941	1,043,594	1,600,020	156,099	5,037,250	69.86	39,613	9,000	—6,854
Spokane, Portland & Seattle	554	408,285	131,136	539,421	49,181	44,331	7,187	176,888	70.13	3,529,268	883,653	—1,050,827
Staten Island Rapid Transit Co.	23	64,298	47,244	111,542	17,156	13,539	1,279	70,472	51.52	278,928	58,200	21,989
Tennessee Central	292	120,349	33,708	154,057	23,593	28,372	4,427	66,982	89.57	12,671	11,000	—9,335
Terminal Association of St. Louis	36	2,626	294,224	296,850	66,245	26,569	982	115,656	80.20	32,275	4,800	—9,193
Texarkana & Ft. Smith	81	88,904	15,164	104,068	8,488	4,256	2,901	32,319	74.60	74,731	49,909	—111,213
Texas & New Orleans	468	146,440	132,402	278,842	59,994	83,538	8,993	205,544	46.66	59,249	7,396	7,577
Texas & Pacific	1,946	1,496,048	547,556	2,043,604	163,292	277,360	41,161	879,904	65.00	207,771	60,228	17,284
Toledo & Ohio Central	435	658,964	37,590	696,554	84,929	149,416	6,399	367,104	63.95	1,434,291	165,000	—33,637
Toledo, Georgia & Western	247	70,272	31,001	101,273	18,954	107,508	2,233	44,663	80.80	107,976	39,846	—13,530
Toledo, St. Louis & Western	455	577,418	39,829	617,247	102,246	118,654	21,233	220,484	98.65	1,446	8,002	—8,804
Trinity & Brazos Valley	368	87,977	23,371	111,348	22,043	29,954	2,518	45,080	73.27	171,890	46,100	—17,805
Ulster & Delaware	128	48,536	11,269	59,805	11,050	11,057	824	44,746	75.55	34,747	6,580	10,704
Union Pacific	3,622	5,684,727	1,216,843	6,901,570	743,644	1,027,044	109,652	2,164,378	79.92	1,512	4,487	—12,588
Union R. R. of Baltimore	8	110,078	53,466	163,544	7,215	.....	.....	9,009	58.25	3,111,059	547,460	—303,617
Union R. R. of Pennsylvania	35	.....	492,477	492,477	41,902	215,298	.....	282,245	10.76	147,851	40,902	—27,734
Vicksburg, Shreveport & Pacific	171	148,374	75,643	224,017	26,869	30,335	5,499	63,097	111.18	—55,059	2,718	—140,462
Virginian	512	728,368	45,230	773,598	69,239	170,778	6,129	263,029	54.42	112,408	22,500	89,908
Washington	2,510	2,459,969	608,060	3,068,029	357,755	495,573	78,629	1,579,978	60.08	344,082	282,082	—50,394
Washington Southern	35	52,383	139,269	191,652	14,773	21,580	1,321	71,238	77.71	1,029,334	155,386	—32,073
West Jersey & Seashore	359	228,473	268,502	496,975	136,970	116,960	9,046	302,171	47.94	124,833	14,595	37,296
Western Maryland	697	1,025,889	81,326	1,107,215	121,512	250,016	23,337	429,905	107.11	—39,007	45,540	—61,731
Western Pacific	974	642,211	115,907	758,118	158,208	105,198	21,336	271,488	73.27	31,487	49,000	—64,575
Western Railway of Alabama	133	99,151	49,969	149,120	23,892	31,719	6,597	51,638	72.67	217,882	45,670	172,186
Wheeling & Lake Erie	512	892,640	46,933	939,573	118,338	147,368	11,569	378,193	74.61	41,233	14,400	—26,829
Yazoo & Mississippi Valley	1,381	1,335,345	383,027	1,718,372	248,655	294,022	19,432	555,696	65.46	359,241	49,108	310,132
									65.03	625,353	119,401	505,918

†Began operation April 1, 1917.



## REVENUES AND EXPENSES OF RAILWAYS

ELEVEN MONTHS CALENDAR YEAR 1917

Name of road.	Average mileage operated during period.	Operating revenues				Operating expenses				Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) income last year.
		Freight.	Passenger.	Total.	(inc. misc.)	Way and structures.	Maintenance of equip-ment.	Traffic.	Trans- portation.					
Alabama & Vicksburg.....	142	\$1,296,365	\$466,539	\$1,762,904		\$264,745	\$321,723	\$56,021	\$652,578	71.06	\$557,735	\$164,750	\$392,404	\$78,413
Alabama Great Southern.....	312	4,462,238	1,545,626	6,007,864		672,610	1,343,097	186,378	1,970,787	66.78	2,150,946	329,974	1,820,661	76,019
Ann Arbor.....	301	2,187,519	502,571	2,689,090		264,540	388,714	69,005	1,280,270	74.65	1,908,270	144,100	1,764,170	31,417
Arizona Eastern.....	377	3,053,473	568,692	3,622,165		452,256	388,714	29,165	1,851,204	49.97	1,958,658	286,329	1,672,329	284,734
Arizona, Topeka & Santa Fe.....	8,639	90,811,639	27,878,012	118,689,651		14,581,053	21,511,876	2,127,452	39,832,774	62.46	48,299,932	9,670,859	38,600,503	-1,422,812
Atlanta & West Point.....	93	813,395	588,157	1,401,552		159,767	263,727	71,152	528,847	69.06	496,107	116,115	379,694	67,338
Atlanta, Birmingham & Atlantic.....	640	2,713,197	612,190	3,325,387		530,838	686,696	167,080	1,589,704	83.61	2,150,946	154,770	1,996,176	-80,991
Atlantic & St. Lawrence.....	166	1,179,894	270,979	1,450,873		456,183	365,216	48,577	1,197,266	131.81	377,624	117,931	259,693	13,449
Atlantic City.....	170	1,092,547	1,784,117	2,876,664		324,603	273,599	39,010	1,543,660	71.27	869,842	120,000	749,750	187,425
Atlantic Coast Line.....	4,787	26,086,124	10,289,714	36,375,838		4,663,457	6,481,722	692,893	14,418,694	69.18	12,158,529	2,169,000	9,978,714	187,425
Baltimore & Ohio.....	4,723	94,716,335	17,924,589	112,640,924		13,683,615	23,611,530	2,219,428	51,018,049	76.63	28,737,177	4,000,522	24,736,655	-1,199,378
Baltimore & Ohio Chicago Terminal.....	79	756,331	5,808	6,564,339		1,818,865	294,518	10,510	1,179,250	100.97	17,685	235,888	23,873	-349,249
Baltimore, Chesapeake & Atlantic.....	87	756,331	381,529	1,137,860		282,396	282,396	15,009	653,807	88.98	144,240	26,870	117,369	-66,756
Bangor & Argoostook.....	632	3,049,274	775,673	3,824,947		556,535	672,584	44,835	1,236,760	66.52	1,354,344	206,250	1,148,026	-117,772
Belt Ry. of Chicago.....	31	.....	.....	3,537,891		500,158	500,158	15,059	1,670,995	71.51	1,007,873	146,128	861,745	6,327
Bessemer & Lake Erie.....	208	11,071,172	358,782	11,430,000		1,349,955	2,763,673	129,416	3,605,200	67.77	3,765,474	941,055	2,824,377	-1,641,586
Birmingham & Gulf.....	36	2,913,123	53,862	3,000,000		304,264	369,185	13,386	1,179,250	86.75	1,843,939	493,287	1,350,652	-247,108
Birmingham Southern.....	34	796,173	22,155	818,328		176,955	290,290	9,102	531,103	96.64	36,548	56,577	10,135,477	-155,685
Boston & Maine.....	2,305	32,443,745	16,325,049	48,768,794		7,781,124	27,021,086	408,260	27,021,086	80.08	12,014,551	1,878,974	10,135,477	-3,822,756
Buffalo & Susquehanna R. R. Corporation.....	252	1,534,683	66,632	1,601,315		249,035	455,535	18,974	511,244	70.42	1,305,210	56,000	1,249,210	-88,916
Buffalo, Rochester & Pittsburgh.....	586	12,105,719	1,191,620	13,297,339		1,414,656	3,662,189	174,136	5,273,940	78.80	2,923,320	431,000	2,492,320	-437,380
Buffalo, Rochester & Pittsburgh.....	586	12,105,719	1,191,620	13,297,339		1,414,656	3,662,189	174,136	5,273,940	78.80	2,923,320	431,000	2,492,320	-437,380
Canadian Pacific Lines in Maine.....	234	1,666,526	287,831	1,954,357		429,987	330,541	14,646	990,126	85.63	1,313,132	100,500	1,212,632	-282,008
Canadian, Cincinnati & Ohio.....	283	3,391,670	270,235	3,661,905		383,521	580,511	181,392	849,715	58.00	1,613,777	147,400	1,466,377	307,965
Carolina, Clinchfield & Ohio of S. C.....	17	3,391,670	270,235	3,661,905		383,521	580,511	181,392	849,715	58.00	1,613,777	147,400	1,466,377	307,965
Central New England.....	301	4,513,035	322,392	4,835,427		500,632	872,999	13,801	1,801,141	65.35	1,750,242	199,400	1,550,842	-398,625
Central of Georgia.....	1,918	9,157,664	3,714,909	12,872,573		2,113,833	2,445,362	440,576	4,720,236	70.62	4,227,683	757,108	3,470,575	238,190
Central of New Jersey.....	683	25,171,639	6,401,284	31,572,923		4,329,024	8,651,178	340,243	13,632,764	69.16	10,587,672	1,751,664	8,836,008	-921,824
Central Vermont.....	411	2,778,404	892,404	3,670,808		412,500	580,511	115,757	3,415,832	82.90	704,668	167,784	536,884	-318,193
Charleston & Western Carolina.....	342	1,644,188	405,055	2,049,243		200,436	188,853	48,220	758,836	66.60	720,847	85,500	624,287	63,287
Chesapeake & Ohio.....	2,478	39,482,341	7,048,466	46,530,807		6,249,992	12,779,791	640,750	16,794,129	77.77	14,982,496	2,121,961	12,860,535	-1,435,679
Chicago & Alton.....	1,052	13,191,726	4,416,819	17,608,545		2,083,446	3,886,295	438,382	6,747,239	71.98	5,291,822	663,104	4,628,718	277,184
Chicago & Eastern Illinois.....	1,131	14,668,726	3,118,997	17,787,723		2,029,404	4,855,320	307,184	7,297,603	77.58	4,333,377	794,500	3,538,877	18,820
Chicago & Erie.....	269	6,905,782	1,538,418	8,444,200		788,457	1,046,999	115,539	3,770,368	75.48	2,065,619	309,042	1,756,577	-39,073
Chicago & Northwestern.....	8,107	66,758,473	22,312,962	89,071,435		12,713,155	16,773,806	1,249,936	39,205,909	75.52	27,332,837	5,200,000	22,132,837	-3,953,888
Chicago, Burlington & Quincy.....	9,373	79,745,427	22,192,521	101,937,948		12,499,275	17,779,791	1,553,041	37,607,242	65.48	38,651,585	7,370,354	31,281,231	-7,634,051
Chicago, Detroit & Can. Gd. Trk. Jctn.....	60	812,074	191,825	1,003,899		118,861	174,539	16,578	667,378	82.78	209,085	39,050	170,034	-70,680
Chicago, Great Western.....	1,496	10,136,214	3,554,979	13,691,193		2,037,010	2,631,534	509,225	5,750,682	76.74	3,487,577	648,213	2,839,364	-1,113,339
Chicago, Indianapolis & Louisville.....	654	5,751,801	1,973,962	7,725,763		808,659	1,555,400	227,642	3,065,510	69.71	2,547,589	411,039	2,136,550	-125,960
Chicago, Junction.....	13	.....	.....	3,400,065		377,350	280,602	14,008	1,644,954	89.17	354,787	41,195	313,413	136,949
Chicago, Milwaukee & St. Paul.....	10,304	73,637,845	19,448,664	93,086,509		10,217,805	19,823,928	1,674,660	43,703,097	74.12	27,059,883	5,926,140	21,083,743	-7,634,051
Chicago, Peoria & St. Louis.....	255	1,656,426	263,658	1,920,084		239,208	442,902	65,780	864,196	83.18	339,246	84,990	254,256	31,461
Chicago, Rock Island & Gulf.....	479	2,504,763	700,059	3,204,822		445,369	475,072	113,137	1,137,811	65.98	1,215,437	154,164	1,061,273	194,681
Chicago, Rock Island & Pacific.....	7,822	52,088,399	20,224,806	72,313,205		9,894,484	15,075,569	1,512,905	29,257,516	74.37	26,307,461	3,720,014	22,587,447	-2,534,281
Chicago, St. Paul, Minn. & Omaha.....	1,752	12,711,830	5,220,269	17,932,099		2,341,454	2,739,023	315,416	8,260,886	72.95	5,972,778	1,201,228	4,771,550	-1,498,731
Chicago, Terre Haute & Southeastern.....	374	3,158,728	1,167,667	4,326,395		402,452	856,718	50,353	1,183,565	76.04	824,394	205,857	618,537	186,596
Cincinnati, Indianapolis & Western.....	321	1,693,305	518,162	2,211,467		304,325	422,060	78,184	1,035,310	79.32	503,689	115,645	388,045	-102,435
Cincinnati, New Orleans & Tex. Pacific.....	337	8,555,579	2,680,701	11,236,280		900,098	2,717,190	314,321	3,868,034	67.29	3,931,091	675,220	3,255,756	-237,137
Cincinnati, Northern.....	245	2,025,540	163,707	2,189,247		332,668	391,423	39,596	1,657,030	72.17	13,473,248	2,382,508	11,090,740	22,001
Cincinnati, St. Louis.....	2,386	33,411,495	10,820,692	44,232,187		4,264,642	9,051,659	966,736	19,405,304	88.05	141,568	60,000	81,569	-69,469
Cleveland, Cincinnati, Chic. & St. Louis.....	197	923,067	213,064	1,136,131		235,147	293,175	12,231	3,765	61.64	3,821,271	668,737	3,151,416	534,977
Coal & Coke.....	1,102	7,528,033	1,743,749	9,271,782		940,780	1,714,183	121,431	3,015,496	60.70	4,255,286	40,277	3,852,509	-49,064
Colorado & Southern.....	42	361,709	27,374	389,083		26,372	152,940	1,309	357,133	60.70	43,374	40,684	2,690	-76,718
Colorado & Wyoming.....	337	780,313	117,075	897,388		168,500	41,270	4,120	909,916	95.45	43,374	40,684	2,690	-76,718
Colorado Midland.....	86	849,714	158,094	1,007,808		87,886	97,404	17,880	266,137	48.43	533,666	45,786	487,840	.....
Cripple Creek & Colorado Springs.....	163	3,609,330	649,981	4,259,311		348,610	412,855	50,412	1,491,709	53.93	2,099,211	.....	.....	.....
Cumberland Valley.....	878	23,460,607	2,801,623	26,262,230		2,395,554	5,930,565	296,887	11,528,036	76.63	6,478,182	793,213	5,684,969	-1,615,312
Delaware & Hudson Co.-R. R. Dept.....	955	8,476,725	52,951,160	61,427,885		4,181,413	8,129,276	866,099	10,552,654	64.53	18,771,394	2,850,326	15,921,068	-1,27,776
Delaware, Lackawanna & Western.....	2,595	20,023,863	4,343,054	24,366,917		3,253,169	4,648,427	440,303	8,305,399	68.26	8,264,498	91,750	8,172,748	-1,538,972
Denver & Rio Grande.....	2,551	1,542,606	323,498	1,866,104		369,813	508,682	23,753	935,376	97.68	261,325	91,076	169,888	-163,388
Denver & Salt Lake.....	384	827,091	313,488	1,140,579		154,017	264,241	26,207	487,209	78.88	975,986	881,032	795,391	-61,041
Denver & Mackinac.....	80	1,660,672	.....	1,660,672		89,359	135,724	19,962	516,019	47.56	799,147	.....	.....	.....
Detroit & Toledo Shore Line.....	.....	.....	.....	1,680,180		.....	.....	.....	.....	.....	.....	.....	.....	.....

\*Began operation June 1, 1917.

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As an illustration of the difficulties experienced by the railroads since and prior to the entrance of this country in the European War, the following comparative figures for one of the large railroads are of interest, as showing the number of men employed during the year 1917, such as firemen, brakemen and telegraphers, as compared with the normal force:

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In an interview at Baltimore Mr. Willard is quoted as saying that President Wilson left him free to take whatever steps would enable him to render the most useful service. "If I thought that I could be of greater service to my country by running a locomotive attached to freight trains over the Baltimore & Ohio than by doing what I am doing today, I would assume the new task without hesitancy. I was an engineer long before I became President of the Baltimore & Ohio. It is my desire to follow the line of activity that will produce the best results for my country in the midst of the supreme struggle in which it is now engaged. . . . Over 2,000 of our men have joined the colors, and it was right that they should do so. Of course, this left us short of men. Our officers have been working night and day. They are overworked; some of them have been ill. Facing such conditions, I could not help feeling that it was my duty to come back and devote my whole time to the railroad property. Our men in the trenches in France are depending on us for munitions and supplies. I have a boy at the front in France. I do not know what is going to happen to that boy before this war is over. But I do want to say that if all I am called upon to experience while my son and the sons of other parents are at the battlefield is a

little inconvenience to myself that might arise through compliance with some government order, I shall be delighted. This is no time for thinking of ourselves and slight interferences with our daily lives."

### American Railway Engineering Association Convention

The American Railway Engineering Association is proceeding with its plans for its annual convention which will be held at Chicago on March 19 to 21 inclusive. Reports will be presented from the standing and special committees. In addition a large part of the session on Wednesday will be devoted to the consideration of the problems with which the maintenance of way department is now confronted in the handling of labor. It is expected that the report of the Committee on Economics of Railway Labor, discussing methods of securing men and of feeding and housing them, will be presented on that day. Letters have been sent out to a selected list of about 100 members of the Association asking them to prepare and submit descriptions of devices and methods for the conservation of labor which have come to their attention.

The annual dinner will be held as usual on Wednesday evening and will be in the nature of a war dinner. It is expected that two prominent railway men will speak on the railway situation at that time.

### Pere Marquette Inspection Awards

Announcement has been made of the results of the 1917 track inspection on the Pere Marquette, based on a trip made in October, conducted by Frank H. Alfred, president of the road. A prize of \$100 was given to William Meier, roadmaster of the Detroit division, Benton Harbor, Mich., for the district receiving the highest grade and a prize of equal amount was given to H. Morris, roadmaster on the Canadian division at Walkerville, Ont., for the district showing the greatest improvement during the year. Prizes of \$25 were awarded to 12 foremen receiving the highest grade on each roadmaster's district and to 11 foremen making the greatest improvement as compared with 1916.

In addition to the examination of the track the inspection trip covered a consideration of signals and an inspection of station grounds and shops, shop grounds, repair tracks and engine houses, three additional inspection committees being appointed to grade these special features. Based on these gradings a prize of \$50 was awarded to E. Smith, the signal supervisor receiving the highest grade for the condition of interlocking and automatic signals. A prize of \$100 was given to Charles Montgomery, division master mechanic at St. Thomas, Ont., whose shop grounds and buildings received the highest awards, and \$25 to the station agent on each superintendent's division for the highest grade on station grounds.

The various prizes were awarded on the basis of grading made by committees assigned to consider the various phases of track maintenance, as well as signals, shop grounds, stations, etc.

### Government to Mobilize Labor

The United States Department of Labor has recently reorganized its employment service for the purpose of conducting a campaign for the mobilization of labor. This is to meet the greatly increased demand of war industries and one of the announced objects is to furnish 250,000 men for transportation service. The employment office formerly under the jurisdiction of the commissioner-general of immigration has been turned over to the United States employment service under the direction of John B. Densmore; and the Secretary of Labor has appointed a special advisory council, including representatives both of employers and of employees, with John Lind, former governor of Minnesota, as chairman. This advisory council is to direct the campaign for co-ordinating the supply and the demand. Secretary Wilson intends later to increase the advisory council by the appointment of representatives from the War and Navy departments and the Department of Agriculture and the shipping board.

"The labor administrator and his advisory council," says Mr. Wilson, "will at once take in hand the questions of standardization of labor policies; will consider labor dilution and



training; priority demands; the adjustment of disputes and the safeguarding of employment. The advisory council will study all phases of the problem, make recommendation and plans for additional machinery and supervise their execution."

Arrangements are being made for the early transportation of 50,000 common laborers to the United States from Porto Rico. As soon as vessels are available 60,000 others will be brought from Porto Rico and the Virgin Islands, sufficient, it is hoped, to take care of the shortage in the domestic supply of railroad and agricultural workers. Director-General McAdoo has asked the employment service to assist in supplying the railroads with labor for maintenance of way and for shop work.

### Embargo Zone System Now in Effect

The zone system of handling embargoes, briefly outlined in the *Railway Age* of January 11, page 140, became effective on January 21. The railroads of the United States and Canada have been divided into 26 zones for this purpose. Hereafter all railroads will transmit their embargo notices, modifications, extensions and cancellations to all zone chairmen concerned and at the same time to all their agents at non-subscriber connections. No road may transmit its embargoes to any of its direct subscriber connections except as may be specifically arranged and agreed upon with the zone chairman. Embargoes received by zone chairmen are transmitted immediately upon receipt to roads listed under their jurisdiction according to their discretion, both as to whether a road may be affected in any particular by the embargo, or whether the method of transmission should be by wire, mail or messenger. When embargoes are placed because of congestion, accumulation, or threatened conditions at a particular gateway, or against shippers at stations where more than one railroad may be involved, the zone chairman will be responsible for any embargo action necessary to prevent accumulations or congestions on other lines entering the gateway or serving the shippers in question. Embargoes must be transmitted by wire to the zone chairman and become effective 24 hours after 11:59 p. m. of the date issued. The 26 zone headquarters and zone chairmen follow:

Zone Headquarters	Name of Embargo Chairman
Atlanta, Ga.	J. L. McCollum.
Birmingham, Ala.	H. E. Hutchens, Southern Ry., Washington, D. C.
Boston, Mass.	A. G. Thomason.
Chicago	D. I. Forsyth (vice-chairman).
Columbus, Ohio	I. W. Geer, Pennsylvania Lines.
Denver, Colo.	E. L. Brown, Denver & Rio Grande.
Detroit, Mich.	F. M. Nowell, Wabash.
Galveston, Tex.	J. H. Keefe, G. Colo. & Santa Fe.
Indianapolis, Ind.	J. W. Coney.
Kansas City, Mo.	O. C. Hill, Kansas City Terminal.
Louisville, Ky.	W. R. Hensley.
Memphis, Tenn.	A. H. Egan, Y. & M. V.
Minneapolis, Minn.	G. T. Slade, Northern Pacific.
Montreal, Que.	W. M. Neal (secretary).
Nashville, Tenn.	E. M. Wrenne, N. C. & St. L.
New Orleans, La.	J. J. Pelley.
New York, N. Y.	F. E. Williamson.
Omaha, Neb.	O. E. Pearson, C. B. & Q.
Philadelphia, Pa.	R. L. O'Donnell, Penna. R. R.
Pittsburgh, Pa.	D. F. Crawford, Penn. Lines West.
Richmond, Va.	W. D. Duke, R. Fred. & Pot.
San Francisco, Cal.	K. M. Nicoles, West. Pac.
Seattle, Wash.	J. H. O'Neill, Great Northern.
St. Louis, Mo.	W. E. McGarry.
Wilmington, N. C.	J. T. King, Atlantic Coast Line.
Winnipeg, Man.	Grant Hall, Canadian Pacific.

### Additions to Railway Honor Roll

Data received from the Seaboard Air Line and the Florida East Coast indicate that 443 employees of those lines are now with the colors. Information received from these roads, together with additional statistics published in the *Railway Age* of January 18, page 181, increase the number of railroad employees and officers in the nation's service reported in the *Railway Age* of January 4, page 22, to 55,302 men. Up to date returns have been received from 126 roads representing 209,463 operated miles. The number of railway officers and employees of these lines now holding commissions in the army or navy number 1,482. The following statistics show the number of men in army or navy service and the names of officers and employees who have re-

ceived commissions for the Seaboard Air Line and the Florida East Coast, respectively:

#### SEABOARD AIR LINE

##### EMPLOYEES WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Hugh Hinde	Claim Agent	Captain	National Army.
J. S. Waterfield	Ast. C.C. to S.M.P.	1st Lieutenant	Off. R. Corps.
W. W. Riddick	Instrumentman	1st Lieutenant	No. Car. Eng.
I. H. Farmer	R't-of-Way Eng.	1st Lieutenant	Off. R. Corps.
C. M. Baucom	Conductor	1st Lieutenant	National Army.
W. P. Briggs	Stenographer	Lieutenant	Off. R. Corps.
Raymond Booth	Inspector	Lieutenant	Eng. Corps Army.
J. D. Hightower	Accountant	Lieutenant	National Army.
D. R. Wynn	Clerk	Lieutenant	National Guard.
Charles Pickett	Stenographer	Lieutenant	O. R. C. M. C.
G. E. Vaughan	Timekeeper	2nd Lieutenant	Army.
Robert Ould	Clerk	2nd Lieutenant	Army.
H. N. Morris	Div. Clerk	2nd Lieutenant	Army.
J. W. Cooper	Clerk	2nd Lieutenant	Field Artillery.
J. L. Gregson	Draftsman	2nd Lieutenant	Marine Corps.

Employees who received commissions	15
Number of employees volunteering or drafted	308
Total number of employees in government service	323

#### FLORIDA EAST COAST

##### OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
C. S. Coe	Eng. M. of W.	Major	17th Eng. (Ry.)

##### EMPLOYEES WHO RECEIVED COMMISSIONS

E. H. Sheeran	Gen. Foreman	Captain	Ry. Engineers.
E. H. Taliaferro	Concr. Foreman	Captain	17th Eng. (Ry.)
R. W. Wood	Resident Eng.	1st Lieutenant	O. R. Tr. Camp.
Gayle McFadden	Ast. Eng.	1st Lieutenant	Fla. Nat. Guard.
R. M. DeGarmo	Resident Eng.	2nd Lieutenant	17th Eng. (Ry.)
George S. Ward	Ast. Eng.		

Officers who received commissions	1
Employees who received commissions	6
Number of employees volunteering or drafted	113
Total number of employees in government service	120

### American Society of Civil Engineers Elects Officers

The American Society of Civil Engineers has elected the following officers for the ensuing year: President, Arthur N. Talbot, professor of engineering, University of Illinois, Urbana, Ill.; vice-presidents, John F. Coleman, J. F. Coleman Engineering Company, New Orleans, La.; Nelson P. Lewis, chief engineer, Board of Estimate and Apportionment, New York. Among the directors elected are George W. Goethals, Samuel Tobias Wagner, chief engineer, Philadelphia & Reading, Philadelphia, Pa.; Milo Smith Ketchum, Dean, College of Engineering University of Colorado, Boulder, Colo. C. A. Morse, chief engineer, Chicago, Rock Island & Pacific, Chicago, and C. E. Johnston, general manager, Kansas City Southern were among those elected members of the Nominating Committee.

Professor Talbot is the author of several engineering texts including "The Railway Transition Spiral" extensively used by railway engineers. He is also chairman of the Joint Committee on Stresses in Track of the American Railway Engineering Association and the American Society of Civil Engineers which is now engaged in exhaustive experimental studies of the stress which railway track sustains under traffic. He has also been active in other engineering associations including the American Society for Testing Materials, of which he was president four years ago.

### Air Brake Association

The executive committee of the Air Brake Association at a recent meeting decided to hold the 1918 annual convention, the announcement stating that "Existing war conditions were finally believed by your executive committee to be a compelling force to hold a convention." The meeting will be held in Cleveland on May 7 to 10.

### Railway Business Association Dinner Postponed

The annual meeting and dinner of the Railway Business Association scheduled for January 25, has been postponed. "The fuel administrator," says President Geo. A. Post, in the telegram to the members, "confronts all industries with such a serious situation requiring the closest attention of all concerned that this postponement was deemed imperative."

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### American Railway Engineering Association Convention

The American Railway Engineering Association is proceeding with its plans for its annual convention which will be held at Chicago on March 19 to 21 inclusive. Reports will be presented from the standing and special committees. In addition a large part of the session on Wednesday will be devoted to the consideration of the problems with which the maintenance of way department is now confronted in the handling of labor. It is expected that the report of the Committee on Economics of Railway Labor, discussing methods of securing men and of feeding and housing them, will be presented on that day. Letters have been sent out to a selected list of about 100 members of the Association asking them to prepare and submit descriptions of devices and methods for the conservation of labor which have come to their attention.

The annual dinner will be held as usual on Wednesday evening and will be in the nature of a war dinner. It is expected that two prominent railway men will speak on the railway situation at that time.

### Pere Marquette Inspection Awards

Announcement has been made of the results of the 1917 track inspection on the Pere Marquette, based on a trip made in October, conducted by Frank H. Alfred, president of the road. A prize of \$100 was given to William Meier, roadmaster of the Detroit division, Benton Harbor, Mich., for the district receiving the highest grade and a prize of equal amount was given to H. Morris, roadmaster on the Canadian division at Walkerville, Ont., for the district showing the greatest improvement during the year. Prizes of \$25 were awarded to 12 foremen receiving the highest grade on each roadmaster's district and to 11 foremen making the greatest improvement as compared with 1916.

In addition to the examination of the track the inspection trip covered a consideration of signals and an inspection of station grounds and shops, shop grounds, repair tracks and engine houses, three additional inspection committees being appointed to grade these special features. Based on these gradings a prize of \$50 was awarded to E. Smith, the signal supervisor receiving the highest grade for the condition of interlocking and automatic signals. A prize of \$100 was given to Charles Montgomery, division master mechanic at St. Thomas, Ont., whose shop grounds and buildings received the highest awards, and \$25 to the station agent on each superintendent's division for the highest grade on station grounds.

The various prizes were awarded on the basis of grading made by committees assigned to consider the various phases of track maintenance, as well as signals, shop grounds, stations, etc.

### Government to Mobilize Labor

The United States Department of Labor has recently reorganized its employment service for the purpose of conducting a campaign for the mobilization of labor. This is to meet the greatly increased demand of war industries and one of the announced objects is to furnish 250,000 men for transportation service. The employment office formerly under the jurisdiction of the commissioner-general of immigration has been turned over to the United States employment service under the direction of John B. Densmore; and the Secretary of Labor has appointed a special advisory council, including representatives both of employers and of employees, with John Lind, former governor of Minnesota, as chairman. This advisory council is to direct the campaign for co-ordinating the supply and the demand. Secretary Wilson intends later to increase the advisory council by the appointment of representatives from the War and Navy departments and the Department of Agriculture and the shipping board.

"The labor administrator and his advisory council," says Mr. Wilson, "will at once take in hand the questions of standardization of labor policies; will consider labor dilution and



training; priority demands; the adjustment of disputes and the safeguarding of employment. The advisory council will study all phases of the problem, make recommendation and plans for additional machinery and supervise their execution."

Arrangements are being made for the early transportation of 50,000 common laborers to the United States from Porto Rico. As soon as vessels are available 60,000 others will be brought from Porto Rico and the Virgin Islands, sufficient, it is hoped, to take care of the shortage in the domestic supply of railroad and agricultural workers. Director-General McAdoo has asked the employment service to assist in supplying the railroads with labor for maintenance of way and for shop work.

### Embargo Zone System Now in Effect

The zone system of handling embargoes, briefly outlined in the *Railway Age* of January 11, page 140, became effective on January 21. The railroads of the United States and Canada have been divided into 26 zones for this purpose. Hereafter all railroads will transmit their embargo notices, modifications, extensions and cancellations to all zone chairmen concerned and at the same time to all their agents at non-subscriber connections. No road may transmit its embargoes to any of its direct subscriber connections except as may be specifically arranged and agreed upon with the zone chairman. Embargoes received by zone chairmen are transmitted immediately upon receipt to roads listed under their jurisdiction according to their discretion, both as to whether a road may be affected in any particular by the embargo, or whether the method of transmission should be by wire, mail or messenger. When embargoes are placed because of congestion, accumulation, or threatened conditions at a particular gateway, or against shippers at stations where more than one railroad may be involved, the zone chairman will be responsible for any embargo action necessary to prevent accumulations or congestions on other lines entering the gateway or serving the shippers in question. Embargoes must be transmitted by wire to the zone chairman and become effective 24 hours after 11:59 p. m. of the date issued. The 26 zone headquarters and zone chairmen follow:

Zone Headquarters	Name of Embargo Chairman
Atlanta, Ga.	J. L. McCollum.
Birmingham, Ala.	H. E. Hutchens, Southern Ry.
Boston, Mass.	A. G. Thomason.
Chicago	D. I. Forsyth (vice-chairman).
Columbus, Ohio	I. W. Geer, Pennsylvania Lines.
Denver, Colo.	E. L. Brown, Denver & Rio Grande.
Detroit, Mich.	F. M. Nowell, Wabash.
Galveston, Tex.	J. H. Keefe, G. Colo. & Santa Fe.
Indianapolis, Ind.	J. W. Coneys.
Kansas City, Mo.	O. C. Hill, Kansas City Terminal.
Louisville, Ky.	W. R. Hensley.
Memphis, Tenn.	A. H. Egan, Y. & M. V.
Minneapolis, Minn.	G. T. Slade, Northern Pacific.
Montreal, Que.	W. M. Neal (secretary).
Nashville, Tenn.	E. M. Wrenne, N. C. & St. L.
New Orleans, La.	J. J. Pelley.
New York, N. Y.	F. E. Williamson.
Omaha, Neb.	O. E. Pearson, C. B. & Q.
Philadelphia, Pa.	R. L. O'Donnell, Penna. R. R.
Pittsburgh, Pa.	D. F. Crawford, Penn. Lines West.
Richmond, Va.	W. D. Duke, R. Fred. & Pot.
San Francisco, Cal.	K. M. Nicoles, West. Pac.
Seattle, Wash.	J. H. O'Neill, Great Northern.
St. Louis, Mo.	W. E. McGarry.
Wilmington, N. C.	J. T. King, Atlantic Coast Line.
Winnipeg, Man.	Grant Hall, Canadian Pacific.

### Additions to Railway Honor Roll

Data received from the Seaboard Air Line and the Florida East Coast indicate that 443 employees of those lines are now with the colors. Information received from these roads, together with additional statistics published in the *Railway Age* of January 18, page 181, increase the number of railroad employees and officers in the nation's service reported in the *Railway Age* of January 4, page 22, to 55,302 men. Up to date returns have been received from 126 roads representing 209,463 operated miles. The number of railway officers and employees of these lines now holding commissions in the army or navy number 1,482. The following statistics show the number of men in army or navy service and the names of officers and employees who have re-

ceived commissions for the Seaboard Air Line and the Florida East Coast, respectively:

#### SEABOARD AIR LINE

##### EMPLOYEES WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Hugh Hinde	Claim Agent	Captain	National Army.
J. S. Waterfield	Ast. C.C. to S.M.P.	1st Lieutenant	Off. R. Corps.
W. W. Riddick	Instrumentman	1st Lieutenant	No. Car. Eng.
I. H. Farmer	R't-of-Way Eng.	1st Lieutenant	Off. R. Corps.
C. M. Baucom	Conductor	1st Lieutenant	National Army.
W. P. Briggs	Stenographer	Lieutenant	Off. R. Corps.
Raymond Booth	Inspector	Lieutenant	Eng. Corps Army.
J. D. Hightower	Accountant	Lieutenant	National Army.
D. R. Wynn	Clerk	Lieutenant	National Guard.
Charles Pickett	Stenographer	Lieutenant	O. R. C. Q. M. C.
G. E. Vaughan	Timekeeper	2nd Lieutenant	Army.
Robert Ould	Clerk	2nd Lieutenant	Army.
H. N. Morris	Div. Clerk	2nd Lieutenant	Army.
J. W. Cooper	Clerk	2nd Lieutenant	Field Artillery.
J. L. Gregson	Draftsman	2nd Lieutenant	Marine Corps.

Employees who received commissions	15
Number of employees volunteering or drafted	308
Total number of employees in government service	323

#### FLORIDA EAST COAST

##### OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
C. S. Coe	Eng. M. of W.	Major	17th Eng. (Ry.)

##### EMPLOYEES WHO RECEIVED COMMISSIONS

E. H. Sheeran	Gen. Foreman	Captain	Ry. Engineers.
E. H. Taliaferro	Concr. Foreman	Captain	17th Eng. (Ry.)
R. W. Wood	Resident Eng.	1st Lieutenant	O. R. Tr. Camp.
Gayle McFadden	Asst. Eng.	1st Lieutenant	Fla. Nat. Guard.
R. M. DeGarmo	Resident Eng.	2nd Lieutenant	17th Eng. (Ry.)
George S. Ward	Asst. Eng.		

Officers who received commissions	1
Employees who received commissions	6
Number of employees volunteering or drafted	113
Total number of employees in government service	120

### American Society of Civil Engineers Elects Officers

The American Society of Civil Engineers has elected the following officers for the ensuing year: President, Arthur N. Talbot, professor of engineering, University of Illinois, Urbana, Ill.; vice-presidents, John F. Coleman, J. F. Coleman Engineering Company, New Orleans, La.; Nelson P. Lewis, chief engineer, Board of Estimate and Apportionment, New York. Among the directors elected are George W. Goethals, Samuel Tobias Wagner, chief engineer, Philadelphia & Reading, Philadelphia, Pa.; Milo Smith Ketchum, Dean, College of Engineering University of Colorado, Boulder, Colo. C. A. Morse, chief engineer, Chicago, Rock Island & Pacific, Chicago, and C. E. Johnston, general manager, Kansas City Southern were among those elected members of the Nominating Committee.

Professor Talbot is the author of several engineering texts including "The Railway Transition Spiral" extensively used by railway engineers. He is also chairman of the Joint Committee on Stresses in Track of the American Railway Engineering Association and the American Society of Civil Engineers which is now engaged in exhaustive experimental studies of the stress which railway track sustains under traffic. He has also been active in other engineering associations including the American Society for Testing Materials, of which he was president four years ago.

### Air Brake Association

The executive committee of the Air Brake Association at a recent meeting decided to hold the 1918 annual convention, the announcement stating that "Existing war conditions were finally believed by your executive committee to be a compelling force to hold a convention." The meeting will be held in Cleveland on May 7 to 10.

### Railway Business Association Dinner Postponed

The annual meeting and dinner of the Railway Business Association scheduled for January 25, has been postponed. "The fuel administrator," says President Geo. A. Post, in the telegram to the members, "confronts all industries with such a serious situation requiring the closest attention of all concerned that this postponement was deemed imperative."

## Traffic News

The Public Service Commission of Oregon has abolished the average agreement provision in the demurrage rules of that state.

J. F. Holden, vice-president in charge of traffic of the Kansas City Southern, has been appointed supervisor of transportation and traffic of the United States Shipping Board, with office at Washington, D. C.

The Hartford & New York Transportation Company, which usually suspends business during the winter, will continue to run one steamer three trips a week between New York and Saybrook, Conn., at the mouth of the Connecticut River, 44 miles south of Hartford.

The Railway Commission of Canada, granting the requests of western grain shippers, has postponed until June 1, next, the date on which rates for the transportation of wheat shall be increased. The increases which have been approved went into effect on all other commodities on February 1.

The new demurrage rules recently announced by William G. McAdoo, director-general of railroads, have been adopted for application to intrastate traffic by the state commissions of Alabama, Illinois, Indiana, Kentucky, Mississippi, Ohio, Tennessee, and practically all of the states west of the Mississippi river.

The New York, Chicago & St. Louis has discontinued through trains Numbers 3 and 4. No. 3 left Buffalo at 6:40 a. m. and No. 4 left Chicago at 2:30 p. m. Train No. 2, Chicago to New York heretofore leaving at 10:35 a. m. now leaves at 8:30 a. m. The Pittsburgh & Lake Erie has discontinued the daily train leaving Pittsburgh for Cleveland at 11 p. m.

The recent order of the Fuel Administration closing certain industries for a period of five days, beginning on January 18, and stopping practically all business except transportation and government work on the ten Mondays beginning with January 21, led to considerable uncertainty on the part of both shippers and railroads as to whether these coalless holidays should be omitted in the computation of demurrage charges. A telegraphic inquiry sent to Washington authorized on these days just as on any ordinary week-day and that the order of the Fuel Administration prohibiting the operation of most industries did not prevent the loading or ties from Chicago brought the reply that demurrage would unloading of cars at those industries.

### Cars Unloaded Even After 26 Days

On the tracks of the Bush Terminal Railroad, New York City, the inspectors of the Port Committee found, on January 10, nearly 100 loaded cars which had been there 26 days or more (out of a total of 443 cars that were waiting to be unloaded); and the committee proposes to take measures to punish any railroad officer or consignee who is responsible for these unreasonable delays. This committee consists of James S. Harlan, member of the Interstate Commerce Commission; Ralph W. E. Donges, of the New Jersey Public Utilities Commission and Travis H. Whitney of the New York State Public Service Commission. Their report says that 29 of the cars referred to as unreasonably delayed had been there since November, and no less than 273 had been on hand more than 10 days. The committee says also that the records of the Bush Terminal Railroad are not well kept, and that the inspectors had found difficulty in getting at the actual facts. The committee also makes public the case of a car containing 90 drums of caustic soda which had been standing in one of the yards of the New York Central for three weeks (with over \$70 demurrage accumulated) which had been reconsigned three times and still was waiting to be unloaded.

### Freight Solicitors on Their Jobs

One of the first interpretations of the President's proclamation taking over the railroads was that competition was abolished, thereby eliminating the need for freight solicitation. Accordingly, many of the roads of the country called in their freight solicitors and employed them at other work. But solicitors are valuable in non-competitive work and most of the lines west of Chicago have put these men back at their posts. They handle claims, trace freight, quote rates, aid in routing cars to avoid congestion, and work to encourage heavy loading and the prompt release of cars by consignees. Operating officers and freight agents in many cases are so busy with operating matters that the solicitors in reality afford the only point of contact between the shippers and the railroads. They are more necessary now, to expedite the movement of the immense traffic of the country than ever before.

### Illinois Roads Prepare to Refund Excess Fare

The legal committee of the Illinois railroads, composed of S. H. Strawn, general solicitor of the Chicago & Alton, R. B. Scott, general solicitor of the Chicago, Burlington & Quincy, and A. P. Humburg, commerce attorney of the Illinois Central, conferred with Edward J. Brundage, attorney-general of the state of Illinois, on January 21 to work out the details of refunding to the public the excess fares collected in the state since January, 1917, above the two cents a mile provided by state statute. This action was necessitated by the recent decision of the United States Supreme Court declaring that the order of the Interstate Commerce Commission in the case of the Business Men's League of St. Louis versus the Atchison, Topeka & Santa Fe et al. was not sufficiently specific to justify the application of the 2.4 cents interstate rate to intrastate passenger business throughout Illinois. According to the agreement reached at the conference, the railroads will receive for redemption the coupons evidencing the payment of excess fare, commencing at midnight January 26. These coupons may be presented at any ticket office of the issuing railroad and will be transmitted by the agent to headquarters where checks will be made out promptly and sent to those asking refunds. It is the intention of the railroads to ask the Interstate Commerce Commission to revise its order in that case so that the points in Illinois between which the 2.4 cents fare will apply will be specifically defined.

### Government Appeals to Southern Farmers

W. G. McAdoo, secretary of the treasury and director-general of railroads, has issued a statement urging the farmers of the southern states to raise enough food for their own section. Reminding them that one of the great tasks of the day is to make the railroads more efficient, he tells them that the people of the South, especially the farmers, are in the habit of using the transportation system of the country to a degree that is highly uneconomic and unnecessary; that is, for the purpose of transporting food and feed from other parts of the United States, because they do not produce enough for themselves.

"Do everything possible during the next year to relieve the strain on the railroad agencies of the Nation by producing your own food and feed crops. The best farmers of the South recognize the fact that it pays as a matter of good farming to produce on each farm the hay and grain for the live stock, all the garden products, fruit, and poultry products which are needed by the farm, and if possible a surplus for sale in the immediate vicinity.

"The growing of cotton is not to be discouraged. Every Southern farmer should raise all the cotton that he can well cultivate, but he should grow the hay and grain to feed his draft animals. He should produce his own milk, butter, eggs, poultry, fruit, and vegetables, and every city and town of the South ought to be supplied with these commodities by the farmers of the South. If the South can feed itself it will release from unnecessary service in the South a vast number of freight cars and engines and will help win the war."

**THE AMERICAN WAR TRUCK**—There are, approximately, 7,500 parts in the American war truck, which weighs complete just over four tons, and is propelled by a 58 horse-power engine, running at 1,350 revolutions per minute.



## Commission and Court News

### Interstate Commerce Commission

The commission has approved without hearing the filing of tariffs by E. Morris and R. H. Countiss providing for increased demurrage and storage charges and new regulations on export traffic to North Pacific coast ports.

### Personnel of Commissions

Oscar S. Straus, chairman of the New York State Public Service Commission, first district, has been reappointed, his present term expiring on February 1. Mr. Straus has told the governor that he expects to be allowed to resign as soon as the extensive new subway construction work has been brought near enough to completion to allow a new man to take up the chairmanship without detriment to the public interest.

### Court News

#### Liability of Initial Carrier

The Iowa Supreme Court holds that where a shipper consigned wood to itself at St. Louis, and the wood was later consigned to the shipper at Philadelphia, the shipper's claim for conversion by the final carrier at Philadelphia waived any right based on conversion at St. Louis by the reconsignment, and ratified the reconsignment. *Adams Seed Co. v. Chicago Great Western (Iowa)* 165 N. W. 367. Decided December 10, 1917.

#### Failure to Stop at Flag Station

Unless it was a passenger train, the North Carolina Supreme Court holds that recovery cannot be had for failure to stop at a flag station on signal of one desiring to take passage; and if it was a passenger train nothing more than actual damages can be recovered, unless the engineer actually saw the signal or with reasonable care ought to have seen it. After the failure of a train to stop at a flag station on the signal of a woman, she, instead of waiting for another train or proceeding by a highway, needlessly attempted to walk to her destination on the track and fell into a cattle guard. It was held that the failure to stop at the station was not the proximate cause of her injuries and she could not recover therefor. *Brown v. Linville River (N. Car.)* 94 S. E. 431. Decided December 5, 1917.

#### Change in Demurrage Tariff

The Circuit Court of Appeals, Fourth Circuit, holds that a local tariff of demurrage charges applies after it has gone into effect, by notice for the required time, to all cars, including those accepted for transportation before the tariff was issued; and the optional allowance at destination is wholly disconnected with the service of transportation. A railroad, therefore, may lawfully apply a new tariff to cars transported before the old tariff was canceled. The court said that the opposing view, to say nothing else, overlooks the essential difference between the service of transportation, which must be furnished and paid for, and the accommodation of storage, which may or may not be provided. Broadly speaking, the former is a right which the carrier cannot deny or abridge, the latter a privilege which it is at liberty to accord or refuse. One is obligatory, the other optional. The court also holds that in the absence of anything in a demurrage tariff, or the statute, requiring the carrier to give notice of arrival of cars, absence of such notice does not affect the time when the demurrage charges commence, notwithstanding notices are usually given on the day of arrival as matter of courtesy or custom. *Chesapeake etc., Coke Co. v. Toledo & Ohio Central*, 245 Fed. 917. Decided July 5, 1917.

### Local and State Taxation of Railroad Property

Part of a lot of cross-ties which were being treated at a railroad's creosoting plant were intended for use outside the state of New Jersey and part within the state. The local assessors attempted to impose a tax on the whole lot. The New Jersey Court of Errors and Appeals held that this was in violation of the state's right to tax the property for state uses under the Railroad Tax Act, §1, providing that the property of railroad corporations used for railroad purposes within the state is not taxable by the local taxing district, but by the state board of taxes and assessments for state uses. What the local assessors should have done was to have ascertained what proportion of these ties was intended to be used outside of New Jersey and what proportion within the state and to levy the local tax accordingly. The fact that that might have been difficult to do was no justification for their action. *P. & R. v. Woodbridge (N. J.)* 102 Atl. 392. Decided November 21, 1917.

### Act of God and Delay in Transportation

The Indiana Appellate Court holds that where a piano was shipped to a point 163 miles distant, and 15 days later, when standing in a yard, it was damaged by the Dayton flood, the proximate cause was the act of God, and not the carrier's delay, and the carrier was not liable. The court thus stated its views on the much debated question as to whether an act of God exonerates a carrier for delay. Two conflicting rules have been established in different jurisdictions: (1) In several states it is held that the act of God completely exonerates the carrier, even though there has been negligent delay in transportation, and these cases rest on the proposition that the delay is not the proximate cause of the loss. (2) In some other states it is held that the act of God does not exonerate the carrier where there has been negligent delay in transportation, and these cases rest on the proposition that the delay is a contributing cause, or a concurring cause, or a proximate cause, or a concurring proximate cause. The first rule has been consistently followed by the federal courts. The Indiana court holds that that rule is sound. The law holds men responsible for the effects of their acts and omissions within the sphere of human control only. An act of God is the manifestation of a superhuman power which breaks the chain of causation in the realm of human activity. It upsets the best-laid plans of men and spoils all their calculations. Because its coming is beyond the scope of man's provision and its power beyond his strength to resist, he is relieved from the consequence thereof. In the case at bar the flood was held the sole cause of the loss of the piano. As between the delay and the damage the relation of cause and effect did not exist. So far as the court was aware, the question had not been previously decided in Indiana.—*Chicago & Erie v. Schaff (Ind.)*, 117 N. E., 869. Decided December 4, 1917.

### Recent Decisions Under the Federal Employers' Liability Act

The federal district court for the Western District of New York holds that a railroad employee pumping water into a tank for the use of locomotives engaged in interstate commerce is engaged in such commerce where such use is not dependent on remote possibilities.—*Collins v. Erie*, 245 Fed. 811.

The New York Court of Appeals holds that work contributing to the safety and integrity of an interstate railroad is a part of such railroad's interstate commerce; and no recovery could be had under the State Workmen's Compensation Act for the death of an employee killed while mowing weeds along the right of way to prevent spread of fire and slippery rails.—*Plass v. Central New England (N. Y.)*, 117 N. E., 952.

The New York Appellate Division holds that a plumber engaged in the maintenance of way department of an interstate carrier, who was engaged in repairing pipes in a station, and was killed by a train while crossing tracks in the course of his employment, was entitled to no compensation under the Workmen's Compensation Act, since he was engaged in interstate commerce.—*Vollmers v. New York Central*, 167 N. Y. Supp., 426.

The New Jersey Supreme Court holds that a crossing flagman employed by a railroad company engaged in interstate and intra-

state commerce who was struck and killed by the engine of a train was engaged in interstate commerce.

The California Supreme Court holds that the interstate transportation of mail by a railroad under a contract with the federal government is "interstate commerce." Proceedings under the California Workmen's Compensation Act sought an award for the death of an employee of the Atchison, Topeka & Santa Fe who, while delivering pouches of mail from the station at Riverhead to a train, was run down by another train. It is held no recovery could be had under the state law.—*Zenz v. Commission (Cal.)*, 168 Pac., 364.

The West Virginia Supreme Court of Appeals holds employees in the machine shops of a railroad company are not engaged in interstate commerce when pushing a carload of lumber about the shops to the place where it is to be unloaded, the car having been loaded at a point in the state and hauled to the shops (its point of destination, likewise in the state), although the lumber was intended for use in building and repairing cars thereafter to be used, in part, in carrying interstate traffic.—*Barnett v. Coal & Coke Ry. Co. (W. Va.)*, 94 S. E., 150.

## United States Supreme Court

### Texas Train-Regulation Void

The decision of the Supreme Court annulling, as applied to interstate traffic, the Texas law requiring trains to be run regardless of late connections, was noticed briefly last week, page 186. This suit was brought by the State of Texas against the Missouri, Kansas & Texas of Texas to recover penalties for the violation of an order of the State Railroad Commission. This order required passenger trains in Texas to start and to run on time, or not over thirty minutes late, and not exceeding ten minutes more (at a junction) if at the end of the thirty minutes a connecting train were in sight. The trains concerned were numbers 9 and 209, received by the defendant at Denison, about five miles south of the Oklahoma state line. The Texas Court of Civil Appeals at first held that the movement must be regarded as a continuous one from Kansas City and St. Louis, and that the order did not apply to the train; but on a rehearing decided that as the defendant took control at Denison with new crews and engines, and could not go beyond the state line, the movement so far as the defendant was concerned was wholly intrastate. Breaches of the order having been proved, it affirmed a judgment imposing a fine. A writ of error was refused by the State Supreme Court. That court recognized that the trains were interstate, but it construed the order as applying to them none the less. The case then came before the Supreme Court of the United States.

The Supreme Court held that the only question with which it had to deal was whether the State Commission could intermeddle in this way, especially when there was sufficient accommodation for local passengers independent of the through trains. The question was not what the State Commission might require of a road deriving its powers from the State, with regard to local business, but whether the order, if applied to this case, would not unlawfully interfere with interstate commerce. On its face the order was an interference with such commerce. It undertook to fix the time allowed for stops in the course of interstate transit. It was a serious interference, for it made the defendant liable for an interstate train not starting on schedule time, when the train did not come into the defendant's hands from another company in another state, until too late. This, as the court understood the facts, was the train to which the advertised schedule applied; and if so, the mere statement of the result was enough to show that the burden imposed not only was serious but was unwarranted as well as unjust. The suggestion that compliance with the order could have been secured by having an extra train ready to run if the regular one was not on time was "hardly practical," and was not an adequate answer, even in form. For the defendant advertised, or at least had the right to advertise, the interstate train, and if it did so, would not free itself from liability for a delay on the part of that train by offering another. The court thought it plain that the order was applied in a way that was beyond the power of the Commission and courts of the State, and the judgment was reversed.—*M. K. & T. of Texas v. State*. Decided January 14, 1918.

## Equipment and Supplies

### Locomotives

THE PHILADELPHIA & READING will build 15 locomotives in its own shops.

THE CHESAPEAKE & OHIO is inquiring for a number of ten-wheel switching locomotives.

THE ILLINOIS CENTRAL, which was reported in the *Railway Age Gazette* of November 30 as having ordered 25 switching locomotives from the American Locomotive Company, has also ordered 4 Santa Fe locomotives from the same company. The switching locomotives are superheated six-wheel locomotives and weigh 169,000 lb. The Santa Fe locomotives are also superheated and will weigh 367,000 lb.

NORFOLK & WESTERN.—This company's order for 20 Mallet type locomotives reported this week as having been given to the American Locomotive Company was placed in December. Full details concerning it and an order for 20 Mallet locomotives given to the Baldwin Locomotive Works at the same time were given in the list of locomotives ordered during 1917 which appeared in the Annual Statistical Number of the *Railway Age*.

### Freight Cars

THE UNITED STATES ORDNANCE DEPARTMENT is asking prices on 150 ammunition cars.

THE AMERICAN SHEET & TIN PLATE COMPANY, Pittsburgh, Pa., is inquiring for 10 50-ton, 7,000-gal. capacity tank cars.

THE UNITED STATES WAR DEPARTMENT has issued inquiries for 400, 15-ton, 150, 30-ton and 75 20-ton flat cars for service in France.

THE VULCAN STEEL PRODUCTS CO., New York, is in the market for 40 box, 19 cattle, 27 flat and 13 gondola cars, all of 28-tons capacity and for export to Brazil.

THE UNITED STATES NAVY has issued inquiries for 10 to 40 flat cars. The Navy has ordered 6 underframes for 30-ton box cars, this item having been incorrectly reported in last week's issue.

### Passenger Cars

THE VULCAN STEEL PRODUCTS CO., New York, is in the market for 5 first-class passenger cars, 6 second-class passenger cars and 4 combination mail and express cars for Brazil.

THE UNITED RAILWAYS OF YUCATAN have ordered from the Railway Storage Battery Car Company, New York, three 55-ft. all-steel storage-battery passenger cars, and two 27-ft. baggage and express trailers for service between Progreso and Merida.

### Miscellaneous

PERU. The January 17 issue of Commerce Reports published by the Bureau of Foreign and Domestic Commerce contains the following notice: A cablegram from Commercial Attaché William F. Montavon, at Lima, Peru, states that he has immediate use for catalogues of railway equipment and construction material, and requests that they be forwarded to his office at once.

### Signaling

THE CENTRAL OF GEORGIA has contracted with the General Railway Signal Company for an electric interlocking plant at Macon Junction to replace one recently destroyed by fire. The machine will have 97 working levers and 15 spare spaces. All switch levers will be provided with lever lights, and an illuminated diagram with 23 lights will also be provided. All track circuits will be changed from direct to alternating-current, and there will be approach, route and section locking on all through passenger routes.



## Supply Trade News

**R. J. Morgan**, formerly supervisor of sales for the American Steel Export Company, Woolworth building, New York, has been appointed assistant general manager of sales.

**H. M. Aubrey**, who has served in various capacities with the Quaker City Rubber Company and the H. W. Johns-Manville Company, has been appointed special packing representative of the Union Supply Company with headquarters at Chicago.

**Frank Bartholomew**, who has been erecting engineer for the Shaw Electric Crane Company for the past 20 years and who resigned his position with that company in December, 1917, has become associated with N. B. Payne in the Havemeyer building, 25 Church Street, New York, specialist in electric cranes.

**R. A. Van Houten**, whose appointment as vice-president and general manager of the Sellers Manufacturing Company with office at Chicago, Ill., was announced in these columns



R. A. Van Houten

on January 18, entered railway service in March, 1887, with the Erie, serving consecutively as chairman and rodman on the New York division for two years; rodman for the chief engineer for two years; assistant engineer on the New York division for seven and one-half years and division engineer on the Delaware division for eight and one-half years. In June, 1908, he became division engineer of the New Jersey & Lehigh division of the Lehigh Valley, which position he held until October 15, 1912,

when he was appointed eastern sales agent for the Sellers Manufacturing Company with office at New York. After seven months in New York, he was transferred to the sales department at Chicago, as sales agent and on April 1, 1917, he was appointed works manager of the plant at Mayfair, (Chicago), which position he held until January 1, 1918, on which date his appointment, as noted above, became effective.

**Edward M. Hagar**, president of the American International Steel Corporation, a subsidiary of the American International Corporation, and former head of the Martin-Wright Aeroplane Company and the Universal Portland Cement Company, died January 18, from pneumonia at his home in New York. Mr. Hagar was born in Salem, Mass., 45 years ago. He was educated at the Massachusetts Institute of Technology and at Cornell. Going to Chicago, he became president of the Portland Cement Company, serving 15 years in that capacity, and resigned to become president of the Wright-Martin Company. He became president of the American International Steel Corporation last June.

**Bertrand H. Wait** has entered the employ of the Portland Cement Association, and on February 1 will take up his duties with the association as district engineer in charge of the Portland Cement Association, New York office, 101 Park avenue. Mr. Wait graduated from Cornell University in 1902 with the degree of civil engineer. In 1903 he was appointed assistant engineer with the Rapid Transit Subway Commission, New York, and remained on this work until 1907, when he was transferred to the Board of Water Supply, city of New York. In 1911 he was transferred to the City Aqueduct Department as assistant division engineer of the Bronx Division, and in

August of that year was made division engineer. In 1913 he resigned to accept the appointment as Division Engineer, New York State Highway Department, in charge of Division No. 1, which consisted of ten counties adjoining New York city. During the past year Mr. Wait has also served as Consulting Engineer for the U. S. Government on cantonment road construction.

**Frank J. Foley**, formerly manager of the mining department of the Westinghouse Electric & Manufacturing Company, on January 1, became connected with the Edison Storage Battery Company, Orange, N. J., as manager of the mining and traction department, with headquarters at the main office in Orange. During the two years Mr. Foley was connected with the New York City service department of the Westinghouse Electric & Manufacturing Company, he helped install the original multiple unit control on the Brooklyn Rapid Transit system, helped install the switchboards and turbines in the Kent Avenue power station of the Brooklyn Rapid Transit, and the turbo-generator unit at the Waterside Station of the Consolidated Gas Company, New York. He then became connected with the East Pittsburgh plant of the Westinghouse Electric & Manufacturing Company, and after attending that company's engineering sales school for a year, was associated with the industrial sales department, going into the mining section in 1910, in which position he had occasion to handle electrical equipment for mines, including storage battery and trolley locomotives. In 1915 Mr. Foley was promoted to manager of the mining section.

### Guy E. Tripp Made Ordnance Executive

**Guy E. Tripp**, of New York, heretofore chairman of the Westinghouse Electric & Manufacturing Company, has been appointed by the War Department, with the rank of colonel, as chief of the production division of the ordnance department, entrusted with the task of supervising and stimulating the production of all ordnance supplies.



Guy E. Tripp

The appointment of Mr. Tripp is one of the important steps in the reorganization of the ordnance bureau, announced recently by its chief, General Crozier.

Mr. Tripp was selected because of his experience in the manufacture of munitions of all kinds, the Westinghouse company having obtained large contracts from the British and Russian governments immediately on the outbreak of the European war. Mr. Tripp is credited with bringing to the department the highest obtainable type of experience and ability to insure speedy and careful production of munitions. The board of directors of the Westinghouse company has given him a leave of absence for the duration of the war.

### Trade Publications

**REINFORCING BARS.**—The Cambria Steel Company, Philadelphia, has issued a 24-page illustrated booklet describing the Cambria Slick concrete reinforcing bar. This booklet contains detailed information concerning the properties of this bar and data of value in designing structures in which it is to be used.

**LONDON CAB TOLL DISPUTE.**—It was announced in London on December 21, that the railway companies have decided not to enforce, for the present, the toll of one penny for each cab entering the London stations for hire. This settles a dispute of six months' standing, causing considerable inconvenience to arriving passengers.

## Financial and Construction

### Railway Financial News

**BALTIMORE & OHIO.**—This company has applied to the Ohio Public Utilities Commission for permission to issue \$10,284,384 of refunding and general mortgage bonds.

**BOSTON & MAINE.**—Attorney General Henry C. Atwill in his annual report to the Massachusetts Legislature recommends the state purchase of the Boston & Maine as a means of protecting its investment in the Fitchburg Railroad bonds. "The Commonwealth holds \$5,000,000 of bonds of the railroad acquired in 1900 at the time of the lease of the Fitchburg Railroad to the Boston & Maine in exchange for 50,000 shares of the common stock of the Fitchburg Railroad. Upon these bonds there is now due accrued interest amounting to about \$225,000. These bonds are unsecured. In order to insure that these bonds and interest will be paid upon any sale of the road, a price necessarily must be realized sufficient to pay at least all outstanding bonds with accrued interest, together with the floating indebtedness.

"There are at present outstanding bonds of the Boston & Maine amounting to \$43,338,000. The floating indebtedness amounts to \$13,306,060. That a sale of the road might not realize an amount sufficient to pay these obligations in full, under the present financial conditions of the country, is by no means improbable. There is no assurance of the payment of the Commonwealth's claim in full unless some method is provided by which the Commonwealth can appear as a competitor for the purchase of the property of the railroad in the event of a proposed sale by the receiver."

**CHESAPEAKE & OHIO NORTHERN.**—Articles of incorporation increasing this company's capital stock from \$3,500,000 to \$4,200,000 were filed recently at Maysville, Ky.

**DENVER & RIO GRANDE.**—Stay of execution of judgments for \$36,515,000 granted against the Denver & Rio Grande by the Federal courts of the Southern District of New York and of Colorado and appointment of a receiver for that road were asked in a petition filed January 18 in the Federal District Court at Denver. The petitioner is the Elliot Frog & Switch Company, of East St. Louis, Ill., which asserts about \$18,000 is due it. The hearing on the application for a receiver has been set for January 24.

### Railway Construction

**ATCHISON, TOPEKA & SANTA FE.**—This company is preparing plans for terminal improvements at Tulsa, Okla., to cost approximately \$800,000.

**ILLINOIS CENTRAL.**—This company has purchased 83 acres of land east of its right of way and south of One Hundred and Seventy-first street, Chicago, which will be used for new classification yards.

**PHILADELPHIA & READING.**—A contract has been given to the William Steele & Sons Company, Philadelphia, Pa., for building a steel and concrete engine house at Philadelphia, part circular and to contain 10 stalls 90 ft. long and 6 stalls 110 ft. long, also to build a machine shop of irregular shape. The latter will be 130 ft. wide at one end and 156 ft. 6 in. at the other by 216 ft. 7 in. long. The cost of the work will be about \$326,183.

**SOUTH MOUNTAIN & HANCEVILLE.**—This company is building a line between Hanceville, Ala., and Stouts Mountain, six miles. P. A. Kearny, president, and C. F. Wheelock, secretary, and chief engineer, American Trust building, Birmingham.

**SOUTHERN PACIFIC.**—This company plans to remodel its timber preserving plant at West Oakland, Cal., at an estimated expenditure of \$350,000. The improvement includes the reconstruction of the track layout, the filling of a portion of the bay to provide room for expansion and the new installation of modern timber treating equipment.

## Railway Officers

### Executive, Financial, Legal and Accounting

**Clyde West** has been appointed paymaster of the Missouri, Kansas & Texas of Texas with office at Dallas, Tex., succeeding **E. E. Deisher**.

**C. B. Zabriskie**, secretary and treasurer of the Tonopah & Tidewater, has been elected also first vice-president with headquarters at New York City.

**John T. Reid**, cashier of the Atlantic Coast Line, at Norfolk, Va., has been elected treasurer with headquarters at Wilmington, N. C., succeeding **James F. Post**, deceased.

**W. G. Davison**, treasurer of the Spokane, Portland & Seattle with office at Portland, Ore., in addition to his duties as treasurer, will act as tax agent. **J. C. Daries**, right of way and tax agent, will be relieved of his duties as tax agent but will perform, in addition to his duties as right of way agent, those of sales manager of the Ruth Realty Company with office at Portland, Ore., as before.

**A. W. Johnston**, assistant to the president of the New York, Chicago & St. Louis at Cleveland, Ohio, retired from active service on January 1. Mr. Johnston had been in the service of the Nickel Plate continuously since April, 1, 1884. He was born at Boston, Mass., on March 4, 1853, and is a graduate of the Massachusetts Institute of Technology. He entered railway service in July, 1875, as a clerk in the office of the general superintendent of the Pittsburgh, Cincinnati & St. Louis. He was later assistant engineer on that road, following which he was superintendent of an industrial corporation in Arizona, chief engineer of the Toledo, Delphos & Burlington and superintendent of the Leavenworth, Topeka & Southwestern. On the Nickel Plate he was successively division engineer, division superintendent, general superintendent, general manager and assistant to the president. He was president of the American Railway Engineering Association for the year 1907-8.

### Operating

**C. P. Shaughnessy** has been appointed trainmaster on the Kent division of the Erie, with headquarters at Mansfield, O.

**J. A. Pierson** has been appointed trainmaster of the Denver & Salt Lake with office at Denver, Colo., succeeding **F. B. Miller**.

**W. A. Couch** has been appointed superintendent of the Memphis, Dallas & Gulf with office at Arkadelphia, Ark., succeeding **J. A. Couch**.

**M. M. Sisson**, trainmaster of the Detroit, Toledo & Ironton at Springfield, Ohio, has been promoted to superintendent of car service with the same headquarters.

**John M. Condon**, assistant superintendent of the Mahoning division of the Erie, with office at Youngstown, Ohio, has been appointed superintendent of terminals, with headquarters at Jersey City, N. J., vice **Frank J. Moser** assigned to other duties.

**J. H. Johnson**, trainmaster of the Northern Pacific, with office at Minneapolis, Minn., has been appointed assistant to the general superintendent of the Eastern district, with headquarters at St. Paul, vice **O. F. Ohlson**, granted leave of absence.

**R. C. Morgan**, superintendent of the Winnipeg terminal division of the Canadian Pacific, has been appointed acting general superintendent of the Manitoba district with office at Winnipeg, Man., succeeding **C. Murphy** who has been assigned to special duties.

**F. G. Archer**, general yardmaster of the Atchison, Topeka & Santa Fe at Clovis, N. M., has been appointed assistant superintendent of the Third district, Middle division, of the



St. Louis Southwestern of Texas with headquarters at Texarkana, Tex., effective January 12.

**A. E. Wallace**, superintendent of the Chicago, Rock Island & Pacific, with office at Manly, Iowa, has been appointed general superintendent of the Chicago and Marion divisions of the Erie, with headquarters at Chicago, succeeding **Franklin G. Robbins**, who has entered military service.

**William J. Jenks**, whose appointment as general manager of the Norfolk & Western with headquarters at Roanoke, Va., has already been announced in these columns was born



W. J. Jenks

on March 21, 1870, near Raleigh, N. C., and was educated in public and private schools. He began railway work in November, 1886, and served as telegraph operator and agent at various places consecutively on the Raleigh & Augusta Air Line, now a part of the Seaboard Air Line, the Richmond & Danville, now a part of the Southern and the Norfolk & Western. From January, 1889, to September, 1901, he was successively train despatcher, chief despatcher, and car distributor on the Norfolk & Western and then to December, 1901, was chief despatcher, on the Seaboard Air Line, at Savannah, Ga. In December, 1901, he was promoted to trainmaster, and from January, 1904, to March, 1908, served as superintendent on various divisions of the same road. From March, 1908, to May, 1912, he was chairman of the Car Allotment Commission, of the Norfolk & Western, and then to December, 1912, was superintendent of the Pocahontas division of the same road. In December, 1912, he was promoted to general superintendent, of the western general division with headquarters at Bluefield, W. Va., which position he held until his recent appointment as general manager of the same road as above noted.

**E. A. O'Donnell**, whose appointment as superintendent of terminals of the Southern Pacific at Houston, Tex., was mentioned in these columns on December 28, was born at



E. A. O'Donnell

Navan, Ont., on August 6, 1884. He attended the Collegiate Institute at Ottawa, Ont., from 1898 to 1900 and business college at Ottawa during 1900. He entered the service of the Great Northern on July 10, 1901, and remained in its employ until September 1, 1905, serving as clerk, stenographer and telegraph operator in the office of the trainmaster, chief despatcher and superintendent at Havre, Mont. From October 1, 1905, to September 15, 1906, he was clerk in the traffic department of the Southern Pacific at Los Angeles, Cal. In the subsequent four months he was a clerk with the Cananea Consolidated Copper Company at Cananea and Senora, Mexico. From January 2, 1907, to August 1, 1917, he was with the Southern Pacific consecutively as secretary to the superintendent and to the general superintendent, yard clerk, switchman, yardmaster, trainmaster and inspector

of transportation in California, Louisiana and Texas. On August 1, 1917, he was promoted to assistant superintendent with headquarters at El Paso, Tex., which position he held until his appointment as noted above, effective December 1.

**R. J. Barry**, division superintendent of the Southern Pacific, Texas lines, with headquarters at Austin, Tex., has been transferred to the Galveston division of the Galveston, Harrisburg & San Antonio and the Texas & New Orleans, with office at Houston, Tex., succeeding **W. L. Cox**. **L. H. Cecil**, general superintendent of the Louisiana & Pacific and superintendent of the Lake Charles & Northern with headquarters at De Ritter, La., has been appointed superintendent of the second division of the Houston & Texas Central with office at Austin, Tex., succeeding Mr. Barry.

**F. B. Miller**, whose appointment as general superintendent of the Colorado, Wyoming & Eastern with headquarters at Laramie, Wyo., was announced in these columns on January 4, was born at Galesburg, Ill., on September 28, 1866. He began his railway career as a rodman and brakeman on the Peoria & Farmington, in June, 1884. In 1885, he entered the service of the St. Louis Southwestern, serving as train baggageman and freight conductor. From 1886 to 1907, he was employed as brakeman, conductor, trainmaster, general yardmaster and superintendent on the Chicago, Burlington & Quincy; from 1907 to 1912, he was superintendent on the Colorado Midland; and from that date to 1913 he was superintendent on the Denver & Salt Lake, resigning in the latter year to engage in farming. From 1915 to 1916 he was assistant superintendent of the Moffat Coal Company and in 1917 returned to the Denver & Salt Lake as trainmaster, serving in that capacity until his appointment as noted above.

**C. O. Bradshaw**, whose appointment as superintendent of the Illinois and the Racine & Southwestern divisions of the Chicago, Milwaukee & St. Paul with headquarters at Savanna,



C. O. Bradshaw

Ill., was announced in these columns on January 18, was born at Grand River, Iowa, on November 11, 1884. His railway career began on June 1, 1900, when he was employed by the Chicago, Burlington & Quincy as a water boy with the bridge and building department. While in that position he learned telegraphy and on July 1, 1901, he was promoted to agent and operator, which position he held until July 14, 1902, when he resigned to enter the service of the Great Northern. He remained with that road until

August 1, 1917, serving consecutively as operator, despatcher, assistant chief despatcher, chief despatcher and trainmaster. He was appointed transportation inspector by the Special Committee on National Defense at Washington, D. C., on August 1, 1917, in which capacity he remained until November 5, 1917, when he was appointed inspector of transportation of the Chicago, Milwaukee & St. Paul with headquarters at Chicago, Ill., which position he held until January 15, 1918, on which date his appointment as noted above became effective. He succeeded **G. R. Morrison**, who has been assigned to duties with the legal department of the St. Paul.

#### Traffic

**W. J. Doyle** was appointed general agent in the general freight department of the St. Louis Southwestern of Texas at Dallas, Tex., effective December 1.

**H. H. Hunkins**, district passenger agent of the Chicago, Milwaukee & St. Paul at Cincinnati, Ohio, has been transferred to Chicago, Ill., as city passenger agent.

**E. C. Newman**, city passenger agent of the Illinois Central at Memphis, Tenn., was appointed district passenger agent with the same headquarters, effective December 1.

**S. C. Frost**, passenger and freight agent of the Los Angeles & Salt Lake at Ocean Park, Cal., has been appointed commercial agent at Santa Ana, Cal., succeeding **W. H. Lee**.

**J. B. Payne**, assistant freight traffic manager of the Texas & Pacific, with headquarters at Dallas, Tex., has been appointed traffic assistant to the receivers, effective February 1.

**Ralph H. Wallace**, general passenger agent of the Erie, with headquarters at New York, in addition to his present duties will in future have direction of the suburban passenger traffic.

**C. E. Norris**, traveling agent of the Chicago & Alton at Cincinnati, Ohio, has been appointed division freight and passenger agent at Mexico, Mo., succeeding **J. E. Fish**, who was appointed local agent at Peoria, Ill., effective January 16.

**J. S. Talbot**, general traffic manager of the Evansville & Indianapolis with headquarters at Terre Haute, Ind., resigned and the office was abolished, effective December 1. **E. P. Lowery** has been appointed general freight and passenger agent with office at Terre Haute, Ind.

**J. F. Osborne**, commercial agent of the Missouri, Kansas & Texas of Texas at Denison, Tex., has been transferred to Dallas, Tex., succeeding **L. T. Fowler**. **D. Allen**, travelling freight agent with headquarters at Chicago, Ill., has been appointed commercial agent at Denison to succeed Mr. Osborne.

**Neal M. Leach**, general traffic manager of the Texas & Pacific, with headquarters at New Orleans, La., will retire from that position on February 1, to become vice-president of the J. H. W. Steele Company, engaged in freight forwarding, steamship chartering, etc., with offices at New Orleans; also at New York and at other places. Mr. Leach was born on September 14, 1869, and was educated at Kentucky University, Lexington, Ky. He began railway work in 1886, with an engineering corps of the Chesapeake & Ohio, and from 1887 to 1894 he was consecutively clerk in the purchasing and commissary departments of the Queen & Crescent Route. From 1895 to 1897 he served as chief of the commissary department and paymaster of the Q. & C. R., and then to 1901 as commercial agent of the New Orleans & Northeastern, the Alabama & Vicksburg, and the Vicksburg, Shreveport & Pacific, at New Orleans, La. From 1901 to March, 1905, he was general agent of the Mobile & Ohio, at the same place, and in March, 1905, was promoted to assistant general freight agent. On February 1, 1908, he was appointed general freight agent of the International & Great Northern at Palestine, Tex., and from May to August, 1911, he was traffic manager of the International & Great Northern, and Texas & Pacific, with office at San Antonio, Tex. From August, 1911, to September, 1913, he served as assistant to the president of the International & Great Northern and as traffic manager of the Texas & Pacific, with office at New Orleans, and since September, 1913, as general traffic manager of the Texas & Pacific.

The authority of **Robert C. Wright**, traffic manager of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., has been extended over the New York, Philadelphia & Norfolk; **R. B. Cooke**, traffic manager of the New York, Philadelphia & Norfolk with office at Norfolk, Va., has been appointed assistant to the traffic manager of the Pennsylvania Railroad and of the New York, Philadelphia & Norfolk, with

headquarters at Norfolk, and **Randolph B. Cooke**, freight solicitor of the New York, Philadelphia & Norfolk, has been appointed division freight and passenger agent of the New York, Philadelphia & Norfolk, with headquarters at Norfolk.

### Engineering and Rolling Stock

**L. F. Couch** has been appointed master mechanic of the Memphis, Dallas & Gulf with office at Nashville, Ark., succeeding **F. J. Sears**.

**W. O. Galbreath** has been appointed chief engineer of the Missouri, Oklahoma & Gulf with office at Muskogee, Okla., succeeding **N. C. Van Natta**.

**Daniel Sinclair**, road foreman of engines of the Northern Pacific, with office at Glendive, Mont., has been appointed fuel supervisor, with headquarters at Glendive.

**J. M. Roeschlaub**, resident engineer on the Denver & Salt Lake with headquarters at Denver, Colo., has been appointed chief engineer with the same headquarters.

**F. T. Mumma**, electrical engineer in charge of the electric sub-stations of the Chicago, Milwaukee & St. Paul main line, has been appointed superintendent of the telegraph and telephone department on the Anchorage division, of the Alaska Railways, succeeding **Herbert Gaytes**, resigned.

**Major Frederick Mears** for the past three years member of the Alaskan Engineering Commission, operating the government railroad in Alaska, has been recalled from Alaska by the War Department to engage in railroad work in France. **William Gerig** consulting engineer for the past two years of the Alaskan Engineering Commission has been appointed engineer in charge of the Anchorage division of the Alaska Railways.

### Purchasing

**A. Gerrard** has been appointed material agent and assistant purchasing agent of the Missouri, Oklahoma & Gulf with office at Muskogee, Okla.

### Obituary

**Joseph Hunter Garahty** died at his home in Chicago on January 15. Mr. Garahty was the purchasing agent of the old Columbus, Hocking Valley & Toledo and later of the Cleveland, Cincinnati, Chicago & St. Louis. A number of years ago for some time after leaving railroad service he was associated with the Griffin Wheel Company, Chicago, following which he engaged in the development of large bituminous coal mines in the Middle West. About 10 years ago he sold his coal interests and retired from active business.

**James F. Post**, treasurer of the Atlantic Coast Line, with headquarters at Wilmington, N. C., died on January 5, at his home in that city. He was born in February 1851, at Wilmington and began railway work in August 1871, as a freight clerk on the Wilmington & Weldon. In 1886 he was appointed assistant treasurer of the same road, the Wilmington, Columbia & Augusta, and the Central Railroads and from 1887 to 1900, served as secretary of the same roads, all of which now form part of the Atlantic Coast Line. From April, 1900, to November, 1902, he was secretary and treasurer of all the roads in the Atlantic Coast Line System, and since the latter date was treasurer of the same system.

**F. M. Luce**, treasurer of the Association of Transportation and Car Accounting officers from 1904 to December, 1916, and formerly auditor of car accounts on the Chicago & North Western and since connected in an advisory capacity with the transportation department of that road, died at Chicago on January 22, at the age of 72. From 1872 to 1899 he was general car accountant of the Chicago & North Western and later became auditor of car accounts. He was the originator of the "Luce System of Car Accounts" now in use on many railroads. At the time of his death he was superintendent of car service of the Menasha Wooden Ware Company and the Two Rivers Wooden Ware Company; and was treasurer of the Central & Western Association of Car Service Officers.



N. M. Leach